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SOME NUTRITION EXPERIMENTS WITH BREWERS' YEAST

With Especial Reference to its Value in Supplementing Certain Deficiencies in Experimental Rations

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In the course of an investigation on the influence of dietary deficiencies on experimental tuberculosis in the albino rat it was noted that a diet composed of 40 per cent rolled oats (6 per cent protein) plus 10 per cent purified casein supplemented with fat soluble A and inorganic salts failed to produce normal growth, such as is obtained when the rat is maintained on a synthetic diet of 16 to 18 per cent purified casein supplemented with fat soluble A, inorganic salts, and vitamin B.

McCollum, Simmonds, and Pitz, in 1917 (1) examined the dietary properties of the oat kernel and found the quality of its protein to be inferior to that of other cereal grains. They obtained better results by supplementing the oat protein with casein or with gelatin, though growth on such mixtures was still below normal.

The results we obtained with the oat-casein ration [1] which was employed in the work referred to above (2) clearly indicated that it was lacking in some essential factor. Growth on this ration was decidedly subnormal. It was suspected that the ration did not contain a sufficient amount of the water-soluble factor. Addition of 2 per cent dried brewers' yeast to the ration, replacing an equivalent amount of starch, gave, indeed, a much better growth curve, with less individual variation. It was not clear whether the improvement was due to the yeast protein, the water-soluble vitamin, or to some other unknown factor.

In the present work this observation was extended with a view to determining the nature of the oat deficiency and the character of the yeast constituent that is capable of correcting this deficiency.

	Per cent
[1] Rolled oats	40.0
Purified casein	10.0
NaCl	1.0
$CaCO_3$	1.5
Butterfat	10.0
Starch	37.5
	100.0

The experiments were carried out upon carefully selected rats from our own colony, bred and raised under standard conditions. Young males, weighing 40 to 50 grams, and about 4 weeks of age, were placed on the respective diets in groups of five or six animals each. The rations were made up by mixing intimately the various constituents and fed ad libitum. The animals were weighed once a week. The curves in the charts represent the average weights of the corresponding groups.

When rats of the above description are placed on an adequate synthetic diet, the composition of which is indicated in Table 1 under ration No. 142, good uniform growth results, which, for pur-

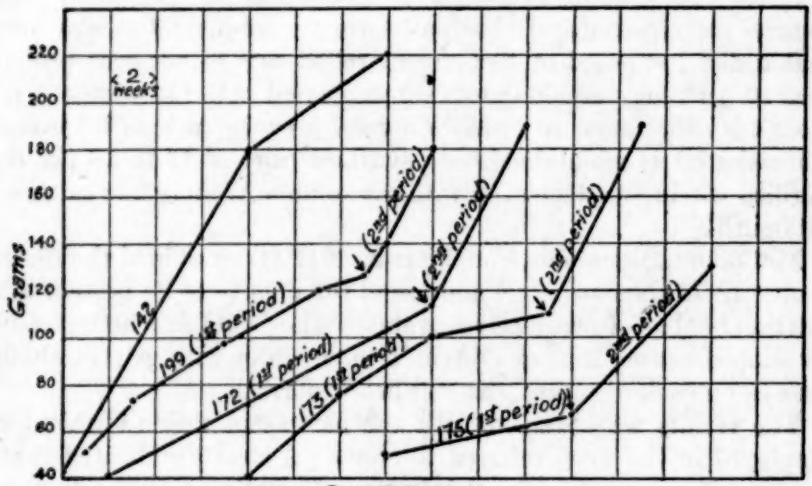

CHART No. 1.

poses of comparison, may be regarded as normal. (See curve 142, Chart 1.)

A ration in which the oat kernel furnished all the protein (14 per cent), and supplemented with inorganic salts and vitamin A, failed to produce normal growth, as shown in the first period of curve 199 of Chart 1.

The results were no better when the protein in the oat ration was increased to 16 and 18 per cent, part of which was furnished in the form of casein or gelatin, as shown in the first periods of curves 172, 173, and 175 (Chart 1). It is evident, therefore, that neither casein nor gelatin is capable of supplementing satisfactorily the oat deficiency.

TABLE 1.—*Showing composition of rations used for the groups indicated in the curves of Charts 1 and 2*

Ration	Rolled oats	Casein [1]	Gelatin	Salt mixture 185 [2]	Dried brewer's yeast	Autoclaved yeast	Yeast protein	Butterfat [1]	Olive oil	NaCl	$CaCO_3$	Starch
142	------	18.0	------	4.0	5.0	------	------	5.0	5.0	------	------	63.0
199 (first period)	92.5	------	------	------	------	------	------	5.0	------	1.0	1.5	------
199 (second period)	86.5	------	------	------	6.0	------	------	5.0	------	1.0	1.5	------
172 (first period)	40.0	12.0	------	------	------	------	------	5.0	5.0	1.0	1.5	35.5
172 (second period)	40.0	9.0	------	------	6.0	------	------	5.0	5.0	1.0	1.5	32.5
173 (first period)	40.0	10.0	------	4.0	------	------	------	5.0	5.0	------	------	36.0
173 (second period)	80.0	------	------	------	8.0	------	------	5.0	5.0	1.0	1.5	------
175 (first period)	40.0	------	10.0	4.0	------	------	------	5.0	5.0	------	------	36.0
175 (second period)	40.0	------	10.0	4.0	------	5.0	------	5.0	5.0	------	------	31.0
176	40.0	10.0	------	------	5.0	------	------	5.0	5.0	1.0	1.5	32.5
195	40.0	------	10.0	------	5.0	------	------	5.0	5.0	1.0	1.5	32.5
192	80.0	------	------	------	6.0	------	------	5.0	5.0	1.0	1.5	1.5
191 (first period)	80.0	6.0	------	------	------	------	------	5.0	5.0	1.0	1.5	1.5
191 (second period)	80.0	------	------	------	6.0	------	------	5.0	5.0	1.0	1.5	1.5
177	40.0	10.0	------	------	------	5.0	------	5.0	5.0	1.0	1.5	32.5
234 (first period)	80.0	------	------	------	------	------	6.0	5.0	5.0	1.0	1.5	1.5
234 (second period)	80.0	------	------	------	------	6.0	------	5.0	5.0	1.0	1.5	1.5
197	------	12.0	------	4.0	6.0	------	------	5.0	5.0	------	------	68.0

[1] Purified by the method of McCollum et al. (3).
[2] McCollum and Davis: Jour. Biol. Chem., 1915, **23**, 235.

The addition of 5 to 6 per cent dried brewers' yeast to the oat ration produced a normal growth curve, irrespective of whether the ration contained casein, gelatin, or neither. This is shown in curves 176, 195, and 192, Chart 2. It is clear, therefore, that dried brewers' yeast satisfactorily supplements the oat kernel. The same is evident from the results of the second period of feeding of groups 199, 172, 173, Chart 1, and 191 of Chart 2, when 6 per cent yeast was either added to the oat-casein mixture or entirely replaced the casein constituent of the diet, or when it replaced an equivalent amount of oats.

It should be noted here that the suggestion that the oat kernel contains a toxic substance which might be injurious if fed in large amounts (1) is untenable, for as much as 80 per cent of oats fed in a ration supplemented with 6 per cent yeast, inorganic salts, and vitamin A, produced a normal growth curve. (See curve 192, Chart 2.)

A consideration of the results obtained thus far led us to inquire into the factor or factors present in dried brewers' yeast capable of supplementing the oat deficiency. Though the oat kernel is known to contain liberal amounts of vitamin B (1), the possibility suggested itself that the level at which oats were fed in rations 172, 173, or 175 might not furnish this vitamin in adequate amounts. To test this possibility a quantity of dried brewers' yeast was autoclaved for six hours at 15-pound pressure, which procedure completely destroyed its vitamin B content, as shown by repeated tests on rats, and this material was fed at a 5 per cent level to group 177 (Chart 2) and to

group 175 (Chart 1) during the second period of feeding. The results demonstrate that autoclaving brewers' yeast, though destroying its vitamin B content, does not impair its efficacy in supplementing the oat deficiency. The oat kernel is therefore not deficient in vitamin B, even if fed at a level of 40 per cent, but is deficient in some other factor, a factor which is present in brewers' yeast and which withstands prolonged autoclaving.

The possibility that the oat protein is deficient in some essential amino acid which is furnished in brewers' yeast suggested itself. It must be admitted, however, that on a priori grounds such a possibility is very remote; for, from what we know of the chemistry of the oat protein, it contains very liberal amounts of the essential amino acids, cystin, lysin, histidine, and arginine (4). There appears to be no definite data on its tryptophane content; but that this

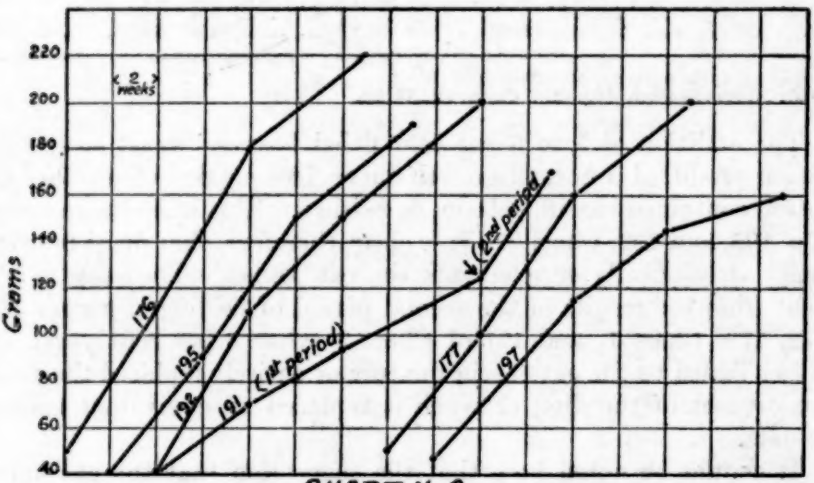

CHART No. 2.

can not be the limiting factor is shown by the fact that casein protein containing 2 per cent tryptophane (5) does not supplement oats even if fed at 10 and 12 per cent levels, while yeast with a tryptophane content of only 0.5 per cent (5) supplements it admirably when fed at 6 per cent level. Similar considerations exclude tyrosine and glutaminic acid as possible limiting factors. The matter was further put to test by feeding yeast protein [1] at a 6 per cent level along with 80 per cent rolled oats in a ration similar to that of 192 (ration 234). The animals showed a decidedly subnormal growth after a period of five weeks, the curve being almost exactly the same as that of 191. Upon replacing the 6 per cent yeast protein

[1] I am indebted for this yeast fraction to Dr. A. Seidell, of this laboratory. It consisted of the insoluble product obtained by diluting fresh brewers' yeast with about an equal volume of water, heating to 90° C., filtering, and drying.

with 6 per cent autoclaved yeast (ration 234, second period), growth was resumed and proceeded in a normal manner.

The fact that the oat protein and the casein protein do not supplement each other and that they are both adequately supplemented by brewers' yeast clearly indicates that they are both lacking in the same essential factor. In other words, a ration in which purified casein is the only source of protein, besides having to be supplemented with vitamin B and the other known essential factors, must be also supplemented with that unknown factor present in yeast in order to make it adequate. This factor, as pointed out earlier, withstands prolonged autoclaving.

In the light of these experiments it is hardly possible to regard casein protein in any way superior to oat protein. This is shown in a very striking manner by comparing curves 197 and 192. The diet in the former case consisted of 12 per cent casein protein, that in the latter of 12 per cent oat protein, both being supplemented with 6 per cent yeast. The growth curve on the oat protein diet was better. If one now compares curve 197 with 172 or 173 it is quite apparent that casein is better supplemented by 6 per cent yeast (about 3 per cent protein) than by 40 per cent oats (6 per cent protein), in spite of the fact that this amount of oats furnishes all the necessary vitamin B, as is readily seen from curve 177.

Further evidence of the correctness of the above view was secured from some experiments carried out in cooperation with Doctor Seidell while testing the activity of some of his vitamin B fractions.

Young rats weighing from 30 to 35 grams each were placed on a ration consisting of the following:

	Per cent
Casein (purified)	18
Salt mixture 185	4
2 per cent vitamin B picrate (6) in milk sugar	1
Cod liver oil	2
Olive oil	8
Starch	67
	100

The rats consumed from 1 to 2 milligrams of the picrate per day, but failed to show any gain in weight during a period of three weeks. At the end of this time 5 per cent autoclaved yeast was added to the above ration, replacing an equivalent amount of starch, when the animals promptly began gaining in weight. It should be added that the same ration, including the autoclaved yeast but without the picrate, when fed to animals of about the same weight and age, resulted in a gradual loss in weight, and death within three to four weeks.

In another series of experiments a number of rats that had attained a weight of 90 to 110 grams on diet 142 (adequate in every respect) were placed upon a similar diet from which the yeast was omitted. In three weeks their weights declined to from 75 to 90 grams. Nine groups of animals were then selected, three in each, placed in individual cages, and fed separately from the basal ration graded amounts of a vitamin B fraction [3] daily, with and without the daily addition of 500 milligrams autoclaved yeast. The results of this test, which lasted 11 days, may be summarized in the following:

Milligrams vitamin B fraction fed daily	Gain per rat in 11 days		Milligrams vitamin B fraction fed daily	Gain per rat in 11 days	
	Without autoclaved yeast	With autoclaved yeast		Without autoclaved yeast	With autoclaved yeast
25	20	----------	2.5	0	9
15	14	37	.5	−7	−3
5	3	27			

The effect produced with the 2.5 and 5 milligrams of the yeast vitamin fraction when fed in combination with the autoclaved yeast is approximately the same as that obtained from the feeding of 200 and 500 milligrams whole dried brewers' yeast, respectively, under the same conditions. It would thus seem that this particular vitamin fraction is about one hundred times as active as whole dried brewers' yeast in its vitamin B content. Since fair growth also resulted from feeding of this fraction alone in doses of upwards of 15 milligrams, it would appear that some of the unrecognized factor in yeast is carried along with the vitamin B factor in this fraction.

CONCLUSIONS

Dried brewers' yeast contains some factor essential in nutrition other than vitamin B. This factor withstands autoclaving at 15 pounds pressure for six hours. It is not in the heat and acid coagulable yeast protein. It is capable of adequately supplementing a ration in which the oat kernel is the sole source of protein and vitamin B.

Evidence is advanced to show that a synthetic ration with casein as the sole source of protein must be supplemented with this unrecognized factor present in yeast, besides vitamin B, in order to make it adequate.

When properly supplemented, oat protein appears to be just as satisfactory in the nutrition of the rat as is casein protein.

[3] I am indebted to Doctor Seidell for this vitamin fraction, a description of which will soon appear in his publication.

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THE RATE OF DEOXYGENATION OF POLLUTED WATERS[1]

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The biochemical oxygen demand test to be discussed in this paper, although at present it enjoys a certain measure of renewed interest, is by no means new. The earliest record of such a procedure is probably to be found in a report published in 1870 by a British Rivers Pollution Commission. In France, oxygen demand determinations were made as long ago as 1885 in a study of the pollution of the Seine. In Germany, extensive series of experiments were conducted on the test from 1900 to 1911. In the United States, a modified procedure appears to have been used in the early experiments at the Lawrence Experiment Station, although it is only since 1915 that the method now in use has been more or less generally adopted.

It is significant both of the intrinsic merit of the biochemical oxygen demand test and, it must be admitted, of the numerous difficulties which arise in its practical application that, in a recent bibliographical review, no less than 150 references were found which dealt directly with the subject. The consensus of opinion appears to be that the test is valuable. In fact, for the purposes of stream-pollution studies, it is frequently the only chemical procedure which can be used to advantage. As a measure of the relative strength of various organic wastes and as a guide in estimating the efficiency of particular methods of treatment, the test also appears to possess decided advantages over the usual chemical procedures.

GENERAL CONSIDERATIONS

As regards the theory underlying the test, it is a well-established fact that a polluted water containing bacteria, if exposed to air, tends to become completely purified. It has been repeatedly demon-

[1] The second of four papers of a symposium on stream pollution presented at the meeting of the sanitary engineering division of the American Society of Civil Engineers at Cincinnati, Ohio, Apr. 23, 1925, and published in the Proceedings of the Society, Vol. LI, No. 9, November, 1925. The first paper, "A review of the work of the United States Public Health Service in investigation of stream pollution," by W. H. Frost, was published in Public Health Reports for January 15, 1926.

strated that definite quantities of dissolved oxygen are absorbed during this self-purification process. It follows that the quantity of oxygen required for the complete stabilization of a polluted water may be taken as a measure of its organic matter content. In the simplest case, two glass-stoppered bottles are completely filled with the sample under examination. The initial dissolved oxygen content is found by analyzing one of these subsamples at the beginning of the test. The other subsample is placed in a constant temperature chamber at 20° C. After an arbitrarily selected time, preferably five days, the sample is removed from the incubator and its oxygen content is redetermined. If bacteria and organic matter were present, a decrease in the oxygen content is invariably observed. This decrease is then reported as the five-day oxygen demand of the sample at 20° C.

A limitation of this test as outlined lies in the fact that the saturation value for the dissolved oxygen content of water at 20° C. is only 9 parts per million, corresponding to the five-day oxygen demand of a highly purified effluent or a highly polluted water. With sewage effluents of average quality, a five-day oxygen demand value of about 20 parts per million may be expected. Before the test can be applied it is necessary, therefore, to dilute such effluents with 5 or 10 volumes of fully aerated distilled water or tap water of good quality. For raw sewages, the five-day oxygen demand is generally greater than 100 parts per million, so that the samples must be diluted about fifty times in order to provide a sufficient supply of oxygen throughout the course of the test. Tannery and abattoir wastes possess oxygen demand values which range from 1,000 to 10,000 parts per million. With unusual trade wastes, five-day oxygen demand values of 50,000 parts per million have been obtained. At the other extreme, the 5-day oxygen demand of good tap water is about 0.5 part per million.

Various other methods of procedure have been proposed for determining the oxygen requirements of heavily polluted waters without resorting to dilution. The "excess-oxygen" method just described, inasmuch as it depends on the volumetric determination of dissolved oxygen, using ordinary glass-stoppered bottles, possesses the merit of extreme simplicity. Extensive series of experiments conducted at the Cincinnati Laboratory of the United States Public Health Service have amply demonstrated that the precision attainable leaves little to be desired even if it is necessary to dilute the samples before conducting the test. With suitable laboratory facilities, the dilution technique is simple.

A more serious limitation, and a limitation which is inherent in any method of procedure, is the necessity for interpreting the results in the light of time and temperature relationships. Owing to the fact

that the rate of absorption of oxygen by a polluted water is exceedingly slow, it is generally desirable to extend the incubation period over several days. Again, as the reaction is purely biochemical, the temperature at which the test is conducted must be carefully controlled. In order to correlate the laboratory results with the ever-changing time of flow and temperature conditions of a stream, it is necessary, therefore, to obtain reasonably accurate formulas by which the oxygen demand of a sample after any interval of time at any specified temperature may be calculated from the values obtained under standardized conditions.

The experiments herein described were undertaken primarily for the purpose of confirming the validity of the various time and temperature correction formulas which have thus far been proposed. The discussion will be limited to the formulas developed in the course of the Ohio River investigation.[2] These experiments have also demonstrated that factors other than time and temperature must be considered before a valid interpretation of the highly consistent results obtained with the "excess-oxygen" method can be made. In particular, the condition of a sample with respect to its state of oxidation and, possibly, the nature of the microorganisms present both exert a marked influence on the magnitude of the observed oxygen demand values.

EXPERIMENTAL PROCEDURE

For the purpose of securing representative samples, a large vessel was first filled with Ohio River water or, in some instances, with sewage suitably diluted. After the sample had been thoroughly mixed, it was siphoned into bottles with capacities of 350 cubic centimeters. The initial oxygen content was then determined and the remaining subsamples were incubated at 9°, 20°, or 30° C. In the course of experiments, which have extended somewhat more than a year, 12 separate series of observations have been made. In most cases the course of the deoxygenation was followed for at least one month. As a rule the experiments were conducted in duplicate, and in several instances comparative data were obtained at three different temperatures.

PRECISION OF BASE DATA

The agreement between duplicate samples was excellent, even when the incubation period extended over several months. In one series of experiments, in which a large number of subsamples were titrated after an incubation period of 96 days at 20° C., the average deviation from the mean was found to be less than 0.2 part per million. The findings in this respect are of considerable analytical interest.

[2] H. W. Streeter and E. B. Phelps: Public Health Bulletin No. 146, U. S. Public Health Service.

GENERAL COURSE OF DEOXYGENATION CURVE

Given the precision of the base data, the next step has been to plot the observed average oxygen demand values against the period of incubation. The type of curve obtained in a typical series of observations is illustrated by Figure 1. The data plotted in this chart are probably unique in so far as they all refer to the same sample incubated at different temperatures over prolonged periods. It is also to be noted that the oxygen demand determinations were made at relatively short intervals, so that the general course of the deoxygenation curve is reasonably well defined. At 9° C. (lower curve) there was a slight lag in the establishment of bacterial equi-

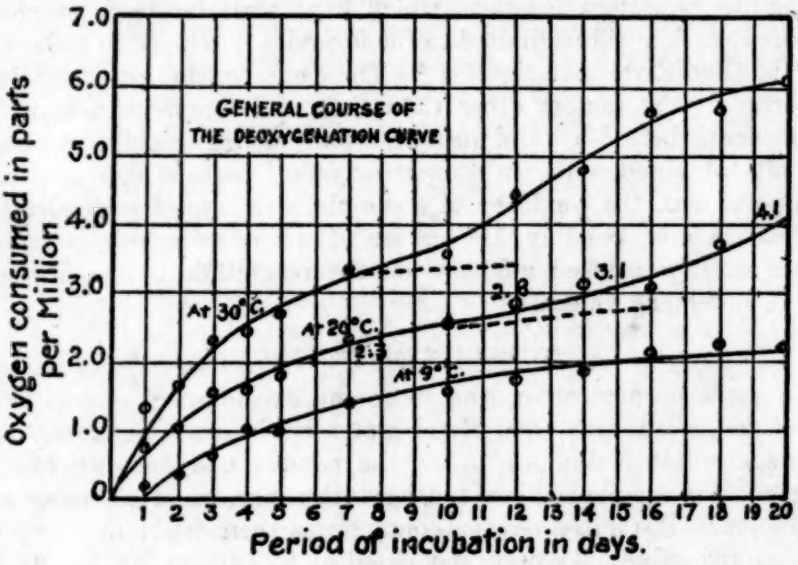

FIG. 1

librium. In other respects, however, there is a striking parallelism between the results obtained at different temperatures.

Considering only the results obtained at 20° C. (middle curve), it is evident that the rate of deoxygenation decreased very uniformly during the first 9 or 10 days. Relatively small quantities of oxygen were absorbed during the next 5 or 6 days. After the sixteenth day, the rate of deoxygenation suffered a marked acceleration. It is also noteworthy that, contrary to a generally accepted notion, appreciable quantities of dissolved oxygen continued to be absorbed even after the twentieth day. As the same phenomenon has been observed with fully aerated samples, this secondary increase in the rate of deoxygenation can hardly be ascribed to the approaching exhaustion of dissolved oxygen. In fact, within wide limits, the rate of deoxygenation is quite independent of the quantity of dissolved oxygen present.

The evidence accumulated thus far is very favorable to a view emphasized by Adeney and other British experimenters, namely, that under aerobic conditions the stabilization of organic matter proceeds in two distinct and strictly consecutive stages—the carbonaceous matter, etc., is first oxidized; then, and only then, does nitrification set in. The second point of inflection on the deoxygenation curve, therefore, marks the onset of the nitrification stage. It will be convenient to discuss these two distinct stages separately.

RATE OF DEOXYGENATION FORMULA

Considering only the average oxygen demand values corresponding to the first or carbon-oxidation stage, an attempt was next made to determine whether these results conformed with reasonable accuracy to a formula proposed some years ago by Phelps. The formula in question is based on the assumption that the rate of deoxygenation at any instant is directly proportional to the amount of organic matter present in a sample. In the differential notation:

$$\text{Rate of deoxygenation} = \frac{d\,(L_a - L)}{d\,t} = \frac{-dL}{d\,t} = K'\,L \qquad (1)$$

in which,

L_a = oxygen absorbed during the first stage.

L = oxygen requirement of the sample at the time, t.

K' = a constant at a given temperature.

The integration of this expression leads directly to the equation:

$$\log \frac{L_a}{L} = \log \frac{L_a}{L_a - X} = Kt \qquad (2)$$

in which,

X = oxygen absorbed in t days (the value generally reported as the oxygen demand of the sample).

$K = 0.4343\ K'$ = the deoxygenation constant.

Solving for X in equation (2), the following expression is obtained:

$$X = L_a\,(1 - 10^{-Kt}) \qquad (3)$$

By the aid of tables giving the value of the term $(1 - 10^{-Kt})$, the validity of the Phelps formula may readily be tested. It is only necessary to observe whether a value of L_a exists which satisfies the condition imposed by equation (3). The agreement between the observed and the computed values is represented graphically by the data plotted in Figure 2, where the average values obtained in 12 separate series of observations have been recorded. In order to place all values on a comparable basis, and for the sake of avoiding a multiplicity of charts, the results have been plotted, not in parts per million, but as a percentage of the oxygen absorbed during the first stage of the deoxygenation. At each temperature the line drawn through these average results is simply the graph of the expression:

$$X = L_a\,(1 - 10^{-Kt})$$

For periods of incubation of less than 8 days at 30° C., 10 days at 20° C., or 15 days at 9° C., the agreement between the observed and the computed percentage values is excellent.

TEMPERATURE CONVERSION FORMULAS

(*a*) *The value of K at different temperatures.*—It is also to be noted that in plotting the theoretical curves the value of K was computed by the equation:

$$K_T = K_{20}\,(1.047^{T-20}) \quad \text{.....} \quad (4)$$

in which,

K_T = the deoxygenation constant at $T°$ C.
K_{20} = the deoxygenation constant at 20° C. = 0.100.

The indication is that, in the interval from 9° to 30° C., the deoxygenation constant is accurately defined in terms of equation (4).

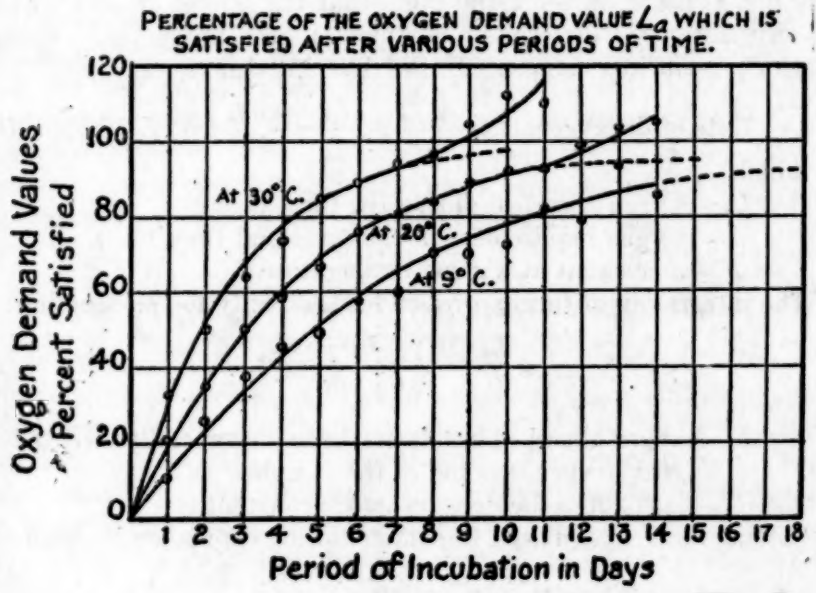

FIG. 2

(*b*) *The value of L_a at different temperatures.*—One further point to be considered in connection with Figure 2 is the value of L_a at different temperatures. Denoting the value of L_a at 20° C. by 100, the value of L_a at 9° C. becomes 78 ± 5. Similarly, the relative value of L_a at 30° C. is 120 ± 7. These values may be represented empirically by the equation:

$$(L_a)_T = (L_a)_{20}\,(0.02\ T + 0.60) \quad \text{.....} \quad (5)$$

in which,

$(L_a)_T$ = value of L_a at $T°$ C.
$(L_a)_{20}$ = value of L_a at 20° C.

The failure to correct for this variation in the oxidizability of a sample with a change in the temperature of incubation does not lead to serious

error when the temperature differences are small. In extreme cases a suitable correction can readily be applied.

APPLICABILITY OF FORMULAS TO STREAM-POLLUTION PROBLEMS

Within certain limits, therefore, the possibility exists of converting an oxygen value obtained at any temperature over any period of incubation into terms of the oxygen demand value which would have been obtained under any other given set of conditions. It is to be borne in mind, however, that the applicability of the formulas is restricted to heavily polluted waters, such as raw river water or recently diluted sewage. By inspection of the data plotted on Figure 1, it is obvious that an entirely different type of deoxygenation curve would be obtained if samples in a more advanced state of oxidation were to be selected. As it is seldom necessary to consider periods of flow exceeding 5 or 10 days below a point of fresh pollution, these limitations are of little consequence in stream-pollution studies. On the whole it appears safe, therefore, to conclude that, when the various formulas discussed in this paper are applied to the average values corresponding to reasonably large groups of observations on recently polluted water, the cumulative error should not exceed 10 per cent. For the purposes of stream-pollution studies, this degree of precision is entirely satisfactory.

APPLICABILITY OF FIVE-DAY OXYGEN DEMAND TEST TO SEWAGE TREATMENT PROBLEMS

From the foregoing discussion it may be inferred that for highly polluted waters the oxygen demand values obtained over relatively short periods of incubation possess a clear-cut significance, so that the interpretation of such results offers no difficulty. Attention will now be directed to samples which have reached a higher state of oxidation. The discussion will be conducted with particular reference to sewage-treatment problems.

Considering the data plotted in Figure 1, and assuming that the five-day oxygen demand of the sample at 20° C. had been determined only after a preliminary conditioning period of 7 days, corresponding to the relatively flat portion of the deoxygenation curve, the observed depletion would have been about $(2.8-2.3)=0.5$ part per million. However, if the examination had been delayed for 15 days, so that nitrification was about ready to start, the observed loss of oxygen would have been about $(4.1-3.1)=1.0$ part per million. Referred to a sewage effluent which had been diluted 50 times before conducting the test, the two oxygen demand values obtained would have been 25 or 50 parts per million, depending on the amount of preliminary purification which the sample had received. It is noteworthy

that under these special conditions the five-day oxygen demand of the more highly oxidized sample was apparently twice as great as that of the same sample in a less highly purified state. In part the discrepancy arises from the fact that one set of values has been selected from the relatively flat portion of the deoxygenation curve (8 to 14 days at 20° C.).

The findings in this respect have a direct bearing on the calculation of the percentage removal of organic matter effected by a treatment plant, and on similar problems in connection with the operation or the comparison of various types of treatment plants. The usual procedure is to base such calculations on the five-day oxygen demand value of the influent and effluent wastes. In the extreme case in question it is obvious that the percentage values obtained would stand in inverse relation to the purification actually accomplished. It is not inconceivable that a good measure of the efficiency commonly attributed to Imhoff tanks and similar treatment devices may be due to an effect of this nature. For filter effluents, however, the maximum effect produced by the abrupt change in the slope of the curve may generally be discounted, because the nitrification stage should be fully established when such samples are examined. The possibility of error from this source is nevertheless to be borne in mind.

As regards the time required under laboratory conditions to effect the complete oxidation of the organic matter in a polluted water, definite conclusions can hardly be drawn. On the basis of nitrite, nitrate, and free ammonia determinations, it is probably safe to conclude that at 20° C. the oxidation of the purely nitrogenous impurity is virtually completed after 40 or 50 days. Appreciable quantities of dissolved oxygen, however, continue to be absorbed even after several months of incubation at 20° C. (See Fig. 3.) The absorption of oxygen beyond the sixtieth day is probably due to the slow oxidation of celluloselike materials. As it would be impractical to conduct routine tests over such extended periods, it is obviously necessary to conclude that the ultimate oxygen demand of a sample is an indeterminate quantity.

Continuing the discussion of the results derived over long periods of incubation, it appears that when a stage of oxidation has been reached corresponding to that which obtains when a sample of raw sewage is incubated for 30 days at 20° C., the deoxygenation curve is approximately a straight line. (See Figs. 1 and 3.) The five-day oxygen demand of a given type of waste, therefore, should be a constant when a sufficiently high degree of purification is reached. It follows that the percentage purification figures computed on the basis of the five-day oxygen demand test should also tend to be constant when samples in an advanced state of oxidation are examined.

The findings in this respect are in satisfactory accord with the direct observation that the removal of organic matter effected by a representative group of treatment plants was always approximately 90 per cent when partly nitrified effluents only were considered. In view of wide variations in the strength of the raw sewages, in the nature of the treatment devices, and in the methods of operation, this approximate constancy [3] of the percentage purification values obtained was an unlooked-for result.

Finally, it need hardly be pointed out that a statement to the effect that the five-day oxygen demand of a sample is, say, 20 parts per million, is of little significance unless a great deal is known concerning the nature or, more precisely, the state of oxidation of the

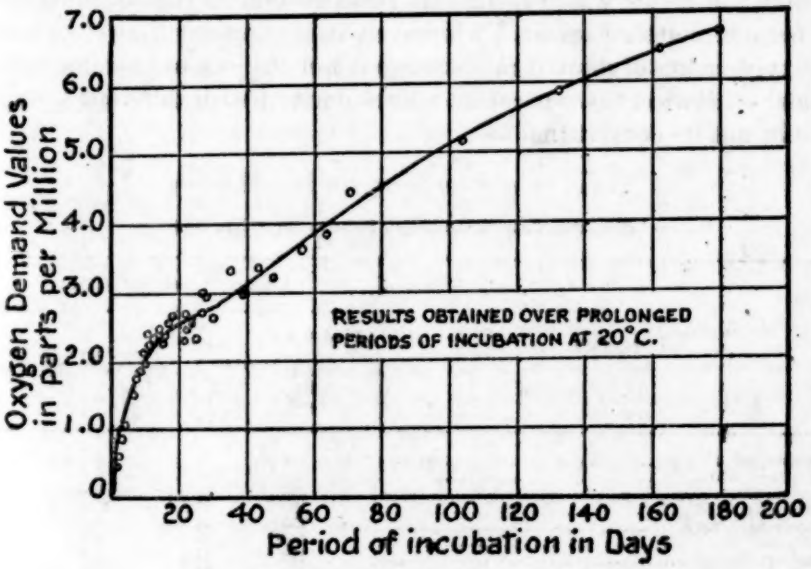

FIG. 3

sample. Thus, a five-day oxygen demand value of 20 parts per million could be referred, with equal reason, to the middle or relatively flat portion of the deoxygenation curve, corresponding to a highly polluted sample, or to the last portion when the nitrification stage has been virtually completed.

CORRESPONDENCE BETWEEN ANALYTICAL DATA AND OBSERVED NATURAL CONDITIONS

The results thus far presented, although indicative of great uniformity, could hardly be referred to natural conditions without further supporting data. Evidence to the effect that the oxygen demand values obtained during the first stage of the oxidation are

[3] Sewage treatment in the United States. Public Health Bulletin No. 132, U. S. Public Health Service, p. 29.

directly related to the quantity of organic matter present is given in Table 1. Using the five-day oxygen demand of a raw sewage as a measure of its organic matter content, and given the contributing population and the total flow of sewage, the per capita contribution of organic matter has been computed for places where fairly accurate data were available. The average per capita oxygen requirement is 51.1 grams per day, with an average deviation from this figure of 5 grams. The high value obtained at Columbus, Ohio, is probably due to the presence of relatively large quantities of industrial wastes. Omitting the Columbus result, the average per capita oxygen demand is 48.8 ± 3.1 grams per day. The constancy of the per capita values is remarkable and leads to the conclusion that the five-day oxygen demand of a raw waste is directly proportional to the concentration of organic matter present. Moreover, it is apparent that the rate of deoxygenation of diluted raw sewage is not subject to extreme variations; otherwise, the per capita values derived with different sewages would not be consistent.

TABLE 1.—*Per capita oxygen demand values*

(Base data from Public Health Bulletin No. 132, p. 115.)

Locality	Results, in parts per million			
	Five-day oxygen demand actually observed	Per capita oxygen demand daily	Deviation from mean, d_1	Deviation from mean, d_2
Alliance, Ohio	92	45.6	5.5	3.2
Baltimore, Md.	120	45.1	6.0	3.7
Canton, Ohio	213	51.6	0.5	2.8
Columbus, Ohio	190	67.6	16.5	
Fitchburg, Mass.	155	51.6	0.5	2.8
Lexington, Ky.	144	48.5	2.6	0.3
Reading, Pa.	118	45.1	6.0	3.7
Rochester, N. Y.	104	53.9	2.8	5.1
Average [1]		51.1	±5.0	
Average [2]		48.8		±3.1

[1] To include all observations. [2] Omitting the Columbus results.

As regards the general course of the oxidation of organic matter under natural conditions, it is well established that, in sewage treatment, nitrification does not begin until considerable preliminary purification has been effected. Moreover, it has recently been demonstrated in experiments conducted at the New Jersey Agricultural Experiment Station that, even in a filter bed, the onset of the nitrification stage is sharply defined. In the Illinois River investigation, nitrification was not observed until a point far removed from the source of initial pollution had been reached. The

exhaustive studies of the Royal Commission on Sewage Disposal of Great Britain also afford instances where the deoxygenation curve represented by Figure 1 was clearly reproduced in streams. Similar curves were also obtained using undiluted sewage. It appears reasonable to assume, therefore, that the phenomena observed in the laboratory actually correspond to natural conditions.

CONCLUSIONS

As a result of the foregoing, the following conclusions have been reached:

1. The Phelps formula holds with reasonable accuracy when applied to samples recently polluted with organic matter.
2. For periods of incubation of less than 10 days it is possible to refer the results obtained under standardized laboratory conditions to the actual times of flow and temperatures of a stream.
3. Under aerobic conditions the stabilization of organic matter apparently proceeds in two distinct stages.
4. The rate at which a polluted water is deoxygenated depends largely on the condition of the sample with respect to its state of oxidation.
5. It is necessary to exercise considerable caution in interpreting the results of analyses when the nitrification stage has almost been reached.
6. Absolute values for the purification accomplished by a treatment plant can not be obtained without resorting to protracted incubation.
7. A complete solution of the problem probably depends on the development of methods whereby the state of oxidation of a sample may be determined more readily.

PNEUMONIA (ALL FORMS) AND INFLUENZA

DEATHS IN LARGE CITIES OF THE UNITED STATES DURING THE FIRST THREE WEEKS OF JANUARY, 1925 AND 1926

The following tables give the numbers of deaths from pneumonia (all forms) and influenza during the periods from January 3 to 23, 1926, and from January 4 to 24, 1925, in 72 large cities of the United States. The figures were taken from reports of the health officers of the cities.

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PNEUMONIA (ALL FORMS)

	Week ended—					
	Jan. 10, 1925	Jan. 9, 1926	Jan. 17, 1925	Jan. 16, 1926	Jan. 24, 1925	Jan. 23, 1926
Atlanta	10	6	27	12	17	17
Baltimore	59	53	56	60	49	56
Birmingham	12	13	8	13	18	13
Boston	23	37	27	37	40	30
Bridgeport	3	4	4	2	3	6
Buffalo	9	17	18	11	5	12
Cambridge, Mass	5	5	4	2	9	1
Camden	5	10	6	8	7	12
Canton	5	3	7	8	4	7
Chicago	82	89	86	78	75	58
Cincinnati	14	10	16	20	19	21
Cleveland	21	52	20	29	20	28
Columbus, Ohio	8	6	4	6	11	11
Dallas	6	10	12	16	15	17
Denver	15	6	16	20	21	12
Detroit	43	52	41	48	48	39
Duluth	3	5	4	4	1	1
Elizabeth	7	-	7	-	4	2
El Paso	7	-	8	5	3	3
Erie	3	5	8	-	1	6
Fall River	3	-	2	1	3	3
Flint	-	2	-	1	-	4
Fort Worth	3	7	12	-	7	5
Grand Rapids	4	3	1	4	1	2
Hartford	6	8	4	10	6	8
Houston	9	17	12	12	11	7
Indianapolis	20	13	10	11	24	16
Kansas City, Kans	-	6	-	2	-	1
Kansas City, Mo	12	11	17	8	15	7
Los Angeles	23	34	25	16	33	27
Louisville	13	23	6	10	10	12
Lowell	5	9	4	-	3	-
Lynn	1	4	-	2	1	1
Memphis	11	13	9	11	19	11
Milwaukee	-	14	17	16	-	19
Minneapolis	9	11	5	17	9	15
Nashville	7	9	7	13	3	3
New Bedford	3	6	-	5	5	8
New Haven	5	3	10	8	11	7
New Orleans	16	22	26	26	12	17
New York	287	248	280	286	254	261
Newark	22	19	20	25	9	19
Norfolk	6	8	5	2	4	-
Oakland	9	5	10	-	6	5
Oklahoma City	4	5	-	2	7	3
Omaha	6	15	5	9	15	5
Philadelphia	96	101	114	92	99	99
Pittsburgh	16	42	53	27	66	-
Portland, Oreg	14	8	7	12	7	11
Providence	3	22	7	11	10	9
Reading	2	4	4	4	-	6
Richmond	7	6	5	5	14	13
Rochester	5	8	4	8	9	10
St. Paul	7	12	10	10	8	5
Salt Lake City	4	4	5	9	6	12
San Antonio	11	11	26	9	14	16
San Diego	4	6	-	3	6	1
San Francisco	18	17	11	13	7	14
Schnectady	-	4	-	6	1	3
Scranton	8	-	10	-	10	-
Somerville	2	2	5	6	1	-
Springfield, Mass	3	-	1	1	2	2
Syracuse	3	7	6	6	6	3
Tacoma	3	2	4	3	4	4
Toledo	6	11	6	9	6	11
Trenton	7	4	8	-	7	6
Washington	13	32	15	30	10	35
Waterbury	5	6	3	7	4	1
Wilmington, Del	5	7	-	7	-	3
Worcester	1	20	4	12	2	12
Yonkers	4	-	1	-	5	-
Youngstown	5	6	9	5	9	4

INFLUENZA

	Week ended—					
	Jan. 10, 1925	Jan. 9, 1926	Jan. 17, 1925	Jan. 16, 1926	Jan. 24, 1925	Jan. 23, 1926
Atlanta	1	1	3	2	1	1
Baltimore	7	5	9	5	3	13
Birmingham	2	4	2	6	3	1
Boston	2	2	3	2	1	1
Bridgeport	1	1	2	1		1
Buffalo	1	2		2	4	2
Cambridge, Mass					1	
Camden	2		1		1	1
Canton	1	1				1
Chicago	4	4	5	2	11	6
Cincinnati	5	4	6	4	3	2
Cleveland	5	5	1	2	3	
Columbus, Ohio		1		1	2	2
Dallas	1	3	1	2	2	3
Denver	1	5	3	6	1	2
Detroit	2	1	3	1	1	
Duluth						
Elizabeth	1			1		
El Paso			5	3	7	5
Erie		1			1	4
Fall River	2					
Flint						
Fort Worth		1				
Grand Rapids	1	1	1	2	1	
Hartford			1	1		1
Houston	1		1	5	3	
Indianapolis	1		1	1	1	
Kansas City, Kans						
Kansas City, Mo	5	2		3	7	1
Los Angeles	2	3	2		1	1
Louisville	1	1		2	1	
Lowell		1				
Lynn						
Memphis		6	3	4	3	3
Milwaukee	1	1	1	1	2	1
Minneapolis		1			1	
Nashville	2	3	2	3	3	6
New Bedford						
New Haven			1		1	
New Orleans	5	6	6	8	9	14
New York	19	21	19	17	24	16
Newark		3				
Norfolk						
Oakland		4		2		2
Oklahoma City	1				2	1
Omaha					1	
Philadelphia	9	6	11	9	9	5
Pittsburgh	5	3	4	3	1	
Portland, Oreg						
Providence			2	1		
Reading						
Richmond	1		1	1	4	1
Rochester	1			1		
St. Paul		1		2		3
Salt Lake City						
San Antonio	1	1	8		4	2
San Diego		1				4
San Francisco	3	10	1	11	2	8
Schenectady		3			2	1
Scranton			1			
Somerville						
Springfield, Mass	2	1	2		1	
Syracuse						
Tacoma						
Toledo		4		1	2	1
Trenton	2	2				4
Washington	3	2	4	2		2
Waterbury		1	1			1
Wilmington, Del						
Worcester						
Yonkers			2			
Youngstown				1		

DEATHS DURING WEEK ENDED JANUARY 23, 1926

Summary of information received by telegraph from industrial insurance companies for week ended January 23, 1926, and corresponding week of 1925. (From the Weekly Health Index, January 26, 1926, issued by the Bureau of the Census, Department of Commerce)

	Week ended Jan. 23, 1926	Corresponding week, 1925
Policies in force	62, 860, 526	58, 444, 053
Number of death claims	13, 869	12, 053
Death claims per 1,000 policies in force, annual rate	11. 5	10. 8

Deaths from all causes in certain large cities of the United States during the week ended January 23, 1926, infant mortality, annual death rate, and comparison with corresponding week of 1925. (From the Weekly Health Index, January 26, 1926, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Jan. 23, 1926		Annual death rate per 1,000 corresponding week, 1925	Deaths under 1 year		Infant mortality rate week ended Jan. 23, 1926 [2]
	Total deaths	Death rate [1]		Week ended Jan. 23, 1926	Corresponding week, 1925	
Total (68 cities)	8, 289	14. 9	14. 2	914	942	[3] 74
Akron	50			10	3	106
Albany [4]	54	23. 9	18. 1	6	3	126
Atlanta	78			18	11	
White	38			8		
Colored	40	(5)		10		
Baltimore [4]	283	18. 5	17. 0	29	20	85
White	229			19		68
Colored	54	(5)		10		162
Birmingham	73	18. 5	15. 7	13	7	
White	39			8		
Colored	34	(5)		5		
Boston	237	15. 9	16. 7	18	32	51
Bridgeport	43			9	4	153
Buffalo	160	15. 5	12. 3	18	19	75
Cambridge	29	12. 6	21. 4	1	7	17
Camden	39	15. 8	17. 8	7	9	118
Canton	26	12. 8	12. 3	4	4	89
Chicago [4]	694	12. 1	12. 5	78	103	69
Cincinnati	137	17. 5	18. 3	7	20	44
Cleveland	186	10. 4	11. 2	25	32	65
Columbus	88	16. 4	16. 4	9	8	83
Dallas	61	16. 4	17. 0	7	17	
White	42			6		
Colored	19	(5)		1		
Dayton	32	9. 6	9. 6	5	2	79
Denver	66	12. 3	18. 6	10	13	
Des Moines	40	14. 0	7. 3	3	5	50
Detroit	348	14. 6	10. 6	72	38	116
Duluth	20	9. 4	7. 1	4	4	94
El Paso	33	16. 4	19. 9	4	10	
Erie	38			4	5	76
Fall River [4]	37	15. 0	8. 5	6	5	87
Flint	17	6. 8	5. 2	4	2	66
Fort Worth	28	9. 6	9. 2	2	3	
White	22			2		
Colored	6	(5)		0		
Grand Rapids	35	11. 9	13. 2	4	4	88
Houston	48	15. 2	19. 9	7	10	
White	32			4		
Colored	16	(5)		3		
Indianapolis	102	14. 8	14. 8	7	7	51
White	86			4		34
Colored	16	(5)		3		165
Jacksonville, Fla	52	25. 8	17. 4	5	2	109
White	27			4		
Colored	25	(5)		1		

[1] Annual rate per 1,000 population.

[2] Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1924. Cities left blank are not in the registration area for births.

[3] Data for 63 cities.

[4] Deaths for week ended Friday, Jan. 22, 1926.

[5] In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentage of the total population: Atlanta 31, Baltimore 15, Birmingham 39, Dallas 15, Fort Worth 14, Houston 25, Kansas City, Kans., 14, Louisville 17, Memphis 38, Nashville 30, New Orleans 26, Norfolk 33, Richmond 32, and Washington, D. C., 25.

Deaths from all causes in certain large cities of the United States during the week ended January 23, 1926, infant mortality, annual death rate, and comparison with corresponding week of 1925. (From the Weekly Health Index, January 26, 1926, issued by the Bureau of the Census, Department of Commerce)—Continued.

City	Week ended Jan. 23, 1926		Annual death rate per 1,000 corresponding week, 1925	Deaths under 1 year		Infant mortality rate week ended Jan. 23, 1926
	Total deaths	Death rate		Week ended Jan. 23, 1926	Corresponding week, 1925	
Jersey City	90	14.9	13.9	12	10	85
Kansas City, Kans.	25	11.2	14.4	1	10	17
White	15			1		21
Colored	10	(3)		0		0
Kansas City, Mo.	94	13.3	13.6	9	12	
Los Angeles	248			25	28	69
Louisville	92	15.9	14.0	7	5	60
White	76			6		60
Colored	16	(3)		1		63
Lowell	35	16.5	9.9	5	1	93
Lynn	28	14.2	14.2	2	1	50
Memphis	70	20.9	29.0	12	8	
White	39			7		
Colored	31	(3)		5		
Milwaukee	117	12.2	10.0	21	20	97
Minneapolis	102	12.5	12.9	10	19	56
Nashville [1]	63	24.1	16.8	5	9	
White	39			3		
Colored	24	(3)		2		
New Bedford	33	14.4	10.9	5	5	87
New Haven	48	14.0	16.0	0	5	0
New Orleans	181	22.8	20.4	15	21	
White	118			10		
Colored	63	(3)		5		
New York	1,689	15.0	14.2	176	160	71
Bronx Borough	207	12.4	11.3	12	13	40
Brooklyn Borough	589	13.9	13.4	66	59	67
Manhattan Borough	710	19.0	18.2	77	73	85
Queens Borough	146	10.7	9.8	17	15	77
Richmond Borough	37	14.0	12.4	4	0	70
Newark, N. J.	118	13.6	14.6	16	18	77
Norfolk	39			1	3	19
White	23			1		30
Colored	16	(3)		0		0
Oakland	73	15.0	12.1	8	7	93
Oklahoma City	23			1	5	
Omaha	62	15.3	14.5	7	8	73
Paterson	31	11.4	14.7	2	2	35
Philadelphia	663	15.9	14.8	69	54	92
Pittsburgh	176	14.5	19.0	19	32	63
Portland, Oreg.	74	13.7	12.2	4	3	41
Providence	63	12.3	13.4	3	6	25
Richmond	75	21.0	20.1	12	8	151
White	34			1		20
Colored	41	(3)		11		385
Rochester	103	17.0	11.9	9	5	72
St. Louis	249	15.8	15.9	24	22	
St. Paul	43	9.1	12.7	2	4	18
Salt Lake City [1]	42	16.7	18.1	5	6	69
San Antonio	77	20.3	18.2	13	15	
San Diego	41	20.2	23.6	1	5	21
San Francisco	226	21.1	14.8	9	7	54
Schenectady	29	16.3	18.0	2	6	58
Seattle	70			3	6	28
Somerville	26	13.7	10.0	3	2	78
Springfield, Mass.	30	11.0	12.5	1	5	14
Syracuse	47	13.5	13.8	4	6	51
Tacoma	20	10.0	10.0	2	0	47
Toledo	89	16.1	11.4	11	13	107
Trenton	54	21.3	19.0	11	5	184
Washington, D. C.	181	19.0	14.7	17	13	96
White	131			10		
Colored	50	(3)		7		
Waterbury	28			4	4	86
Wilmington, Del.	36	15.4	15.0	8	5	188
Worcester	59	16.1	10.4	7	7	81
Yonkers	38	17.4	11.0	4	3	90
Youngstown	32	10.4	14.7	6	3	76

[1] Deaths for week ended Friday, Jan. 22, 1926.

[3] In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentage of the total population: Atlanta 31, Baltimore 15, Birmingham 39, Dallas 15, Fort Worth 14, Houston 25, Kansas City, Kans., 14, Louisville 17, Memphis 38, Nashville 30, New Orleans 26, Norfolk 38, Richmond 32, and Washington, D. C., 25.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary and the figures are subject to change when later returns are received by the State health officers

Reports for Week Ended January 30, 1926

ALABAMA

	Cases
Chicken pox	53
Diphtheria	16
Influenza	326
Malaria	8
Measles	21
Mumps	55
Pellagra	7
Pneumonia	198
Scarlet fever	18
Smallpox	26
Tetanus	1
Tuberculosis	32
Typhoid fever	9
Whooping cough	34

ARIZONA

Chicken pox	2
Diphtheria	1
Measles	1
Mumps	8
Pneumonia	1
Poliomyelitis	1
Scarlet fever	8
Tuberculosis	19
Typhoid fever	1
Whooping cough	9

ARKANSAS

Chicken pox	32
Diphtheria	7
Influenza	211
Malaria	6
Measles	1
Mumps	12
Pellagra	2
Scarlet fever	8
Smallpox	7
Trachoma	8
Tuberculosis	7
Typhoid fever	3
Whooping cough	3

CALIFORNIA

Cerebrospinal meningitis:	Cases
Los Angeles	2
Los Angeles County	2
San Diego Naval Training Station	7
Chicken pox	276
Diphtheria	123
Influenza	755
Leprosy—Tracy	1
Lethargic encephalitis—Los Angeles	1
Measles	62
Mumps	186
Poliomyelitis:	
Oakland	1
Salinas	1
San Francisco	1
San Leandro	1
Scarlet fever	193
Smallpox:	
Los Angeles	40
Los Angeles County	12
Scattering	34
Typhoid fever	7
Whooping cough	53

COLORADO

Chicken pox	91
Diphtheria	19
Measles	8
Mumps	3
Pneumonia	7
Poliomyelitis	1
Scarlet fever	32
Tuberculosis	22
Typhoid fever	1
Whooping cough	87

CONNECTICUT

Chicken pox	179
Diphtheria	48
German measles	13
Influenza	12
Lethargic encephalitis	1

CONNECTICUT—continued

	Cases
Measles	779
Mumps	30
Pneumonia (broncho)	32
Pneumonia (lobar)	55
Scarlet fever	109
Septic sore throat	7
Tuberculosis (all forms)	24
Typhoid fever	3
Whooping cough	88

DELAWARE

Chicken pox	8
Diphtheria	5
Measles	84
Mumps	1
Pneumonia	3
Scarlet fever	11
Tuberculosis	4

FLORIDA

Cerebrospinal meningitis	3
Chicken pox	38
Diphtheria	18
Influenza	25
Malaria	3
Measles	4
Mumps	18
Pneumonia	9
Scarlet fever	8
Smallpox	84
Tuberculosis	14
Typhoid fever	6
Whooping cough	4

GEORGIA

Actinomycosis	1
Chicken pox	21
Conjunctivitis (acute)	2
Diphtheria	20
Dysentery	1
Hookworm disease	1
Influenza	448
Malaria	5
Measles	19
Mumps	31
Pellagra	1
Pneumonia	135
Scarlet fever	9
Septic sore throat	11
Smallpox	17
Tuberculosis	13
Typhoid fever	15
Whooping cough	20

IDAHO

Cerebrospinal meningitis—Moscow	2
Chicken pox	7
Diphtheria	7
Measles	1
Mumps	3
Pneumonia	1
Scarlet fever	10
Smallpox	7

ILLINOIS

Cerebrospinal meningitis—Cook County	1
Diphtheria	102
Influenza	43

ILLINOIS—continued

	Cases
Measles	610
Pneumonia	407
Poliomyelitis:	
Cook County	1
Henry County	1
Macon County	1
Scarlet fever	443
Smallpox:	
Logan County	11
Scattering	30
Tuberculosis	180
Typhoid fever	26
Whooping cough	150

INDIANA

Cerebrospinal meningitis	1
Chicken pox	51
Diphtheria	34
Influenza	42
Jaundice (epidemic)	3
Measles	175
Mumps	1
Pneumonia	27
Poliomyelitis	2
Scarlet fever	228
Smallpox	121
Tuberculosis	49
Typhoid fever	2
Whooping cough	37

IOWA

Chicken pox	47
Diphtheria	17
German measles	4
Measles	214
Mumps	44
Pneumonia	6
Scarlet fever	51
Smallpox	29
Tuberculosis	23
Typhoid fever	6
Whooping cough	18

KANSAS

Cerebrospinal meningitis—Ottawa	1
Chicken pox	93
Diphtheria	26
German measles	2
Influenza	50
Measles	41
Mumps	20
Pneumonia	108
Poliomyelitis:	
Linn	1
Wichita	1
Scarlet fever	94
Smallpox	9
Trachoma	1
Tuberculosis	29
Typhoid fever	2
Whooping cough	80

LOUISIANA

Diphtheria	22
Influenza	120
Malaria	2
Pneumonia	40

LOUISIANA—continued

	Cases
Scarlet fever	7
Smallpox	42
Tuberculosis	30
Typhoid fever	12
Whooping cough	6

MAINE

Chicken pox	58
Diphtheria	2
German measles	3
Influenza	14
Measles	19
Mumps	27
Paratyphoid fever	1
Pneumonia	32
Scarlet fever	33
Septic sore throat	9
Tuberculosis	9
Typhoid fever	2
Vincent's angina	3
Whooping cough	32

MARYLAND [1]

Chicken pox	164
Diphtheria	31
Dysentery	2
German measles	7
Influenza	1,073
Lethargic encephalitis	1
Measles	1,249
Mumps	120
Pneumonia (broncho)	127
Pneumonia (lobar)	145
Scarlet fever	49
Tuberculosis	117
Typhoid fever	8
Whooping cough	61

MASSACHUSETTS

Cerebrospinal meningitis	2
Chicken pox	287
Conjunctivitis (suppurative)	7
Diphtheria	79
German measles	75
Influenza	16
Lethargic encephalitis	1
Malaria	1
Measles	1,584
Mumps	115
Ophthalmia neonatorum	14
Pneumonia (lobar)	135
Poliomyelitis	2
Scarlet fever	358
Septic sore throat	4
Tuberculosis (pulmonary)	106
Tuberculosis (other forms)	59
Typhoid fever	6
Whooping cough	469

MICHIGAN

Diphtheria	86
Measles	1,601
Pneumonia	159
Scarlet fever	340
Smallpox	15
Tuberculosis	171
Typhoid fever	7
Whooping cough	223

[1] Week ended Friday.

MINNESOTA

	Cases
Chicken pox	152
Diphtheria	53
Influenza	3
Measles	35
Pneumonia	1
Poliomyelitis	2
Scarlet fever	401
Smallpox	4
Tuberculosis	40
Typhoid fever	2
Whooping cough	46

MISSISSIPPI

Diphtheria	13
Poliomyelitis	1
Scarlet fever	9
Smallpox	8
Typhoid fever	3

MISSOURI

(Exclusive of Kansas City)

Cerebrospinal meningitis	1
Chicken pox	52
Diphtheria	72
Epidemic sore throat	4
Influenza	22
Measles	41
Mumps	56
Ophthalmia neonatorum	2
Pneumonia	7
Scarlet fever	163
Smallpox	7
Trachoma	1
Tuberculosis	45
Whooping cough	22

MONTANA [2]

Chicken pox	56
Diphtheria	17
German measles	23
Influenza	1
Lethargic encephalitis	1
Measles	18
Mumps	93
Scarlet fever	74
Smallpox	18
Tuberculosis	8
Typhoid fever	2
Whooping cough	30

NEBRASKA

Chicken pox	25
Diphtheria	5
Influenza	2
Measles	1
Mumps	2
Scarlet fever	27
Smallpox	13
Tuberculosis	3
Whooping cough	5

NEW JERSEY

Cerebrospinal meningitis	2
Chicken pox	430
Diphtheria	101
Influenza	21

[2] Report for two weeks ended Jan. 30, 1926.

NEW JERSEY—continued

	Cases
Measles	1,401
Pneumonia	218
Scarlet fever	207
Smallpox	2
Typhoid fever	9
Whooping cough	73

NEW MEXICO

Cerebrospinal meningitis	1
Chicken pox	54
Conjunctivitis	1
Diphtheria	2
Influenza	3
Measles	1
Mumps	22
Pneumonia	24
Scarlet fever	22
Smallpox	2
Tuberculosis	97
Whooping cough	23

NEW YORK

(Exclusive of New York City)

Cerebrospinal meningitis	2
Chicken pox	434
Diphtheria	81
German measles	290
Influenza	45
Lethargic encephalitis	1
Measles	928
Mumps	142
Ophthalmia neonatorum	2
Pneumonia	309
Poliomyelitis	2
Scarlet fever	266
Septic sore throat	3
Trachoma	1
Typhoid fever	28
Vincent's angina	10
Whooping cough	332

NORTH CAROLINA

Cerebrospinal meningitis	1
Chicken pox	170
Diphtheria	34
German measles	41
Measles	162
Scarlet fever	47
Smallpox	58
Typhoid fever	6
Whooping cough	111

OKLAHOMA

(Exclusive of Tulsa and Oklahoma City)

Cerebrospinal meningitis:	
Mayes	1
Tulsa	1
Chicken pox	29
Diphtheria	15
Influenza	451
Malaria	10
Measles	7
Mumps	3

[1] Deaths.

OKLAHOMA—continued

	Cases
Pellagra	3
Pneumonia	211
Scarlet fever	21
Smallpox	10
Typhoid fever	14
Whooping cough	51

OREGON

Cerebrospinal meningitis	1
Chicken pox	15
Diphtheria	16
Influenza	49
Measles	14
Mumps	38
Pneumonia [1]	[1]16
Scarlet fever	40
Smallpox:	
Deschutes County	33
Linn County	26
Morrow County	11
Portland	10
Scattering	23
Tuberculosis	7
Typhoid fever	4
Whooping cough	44

PENNSYLVANIA

Cerebrospinal meningitis—Dayton	1
Chicken pox	929
Diphtheria	180
German measles	73
Impetigo contagiosa	9
Lethargic encephalitis	2
Measles	2,508
Mumps	204
Ophthalmia neonatorum—Philadelphia	1
Pneumonia	120
Scabies	8
Scarlet fever	619
Tetanus—Pittsburgh	1
Tuberculosis	106
Typhoid fever	23
Whooping cough	381

RHODE ISLAND

Chicken pox	8
Diphtheria	7
German measles	1
Influenza	9
Measles	513
Mumps	4
Pneumonia	1
Scarlet fever	10
Tuberculosis	5
Typhoid fever—Woonsocket	1
Whooping cough	16

SOUTH DAKOTA

Chicken pox	11
Diphtheria	4
Measles	7
Mumps	57
Pneumonia	3
Scarlet fever	54
Smallpox	2

TENNESSEE

	Cases
Cerebrospinal meningitis—Hardin County	1
Chicken pox	39
Diphtheria	7
Influenza	137
Malaria	3
Measles	4 200
Ophthalmia neonatorum	3
Pellagra	5
Pneumonia	129
Scarlet fever	14
Smallpox	6
Tuberculosis	35
Typhoid fever	3
Whooping cough	10

TEXAS

Cerebrospinal meningitis	2
Chicken pox	57
Diphtheria	27
Influenza	114
Lethargic encephalitis	1
Measles	9
Mumps	17
Pellagra	1
Pneumonia	34
Scarlet fever	29
Smallpox	88
Tuberculosis	19
Typhoid fever	10
Whooping cough	43

UTAH

Cerebrospinal meningitis—Salt Lake City	1
Chicken pox	85
Diphtheria	11
Influenza	662
Measles	2
Mumps	25
Pneumonia	31
Poliomyelitis—Salt Lake City	1
Scarlet fever	11
Smallpox	5
Typhoid fever	1
Whooping cough	25

VERMONT

Chicken pox	15
Diphtheria	2
Measles	3
Mumps	1
Scarlet fever	12
Typhoid fever	1
Whooping cough	25

VIRGINIA

Smallpox	8

WASHINGTON

Cerebrospinal meningitis:	
Seattle	1
Spokane	4
Stevens County	3

WASHINGTON—continued

	Cases
Chicken pox	137
Diphtheria	13
German measles	21
Influenza	3
Measles	16
Mumps	162
Scarlet fever	101
Smallpox:	
Tacoma	28
Scattering	55
Tuberculosis	33
Typhoid fever	1
Whooping cough	52

WEST VIRGINIA

Diphtheria	8
Scarlet fever	6
Smallpox	2
Typhoid fever	1

WISCONSIN

Milwaukee:	
Cerebrospinal meningitis	1
Chicken pox	110
Diphtheria	28
German measles	6
Measles	10
Mumps	33
Pneumonia	28
Scarlet fever	27
Tuberculosis	20
Typhoid fever	1
Whooping cough	63
Scattering:	
Cerebrospinal meningitis	1
Chicken pox	205
Diphtheria	30
German measles	4
Influenza	52
Measles	167
Mumps	183
Pneumonia	29
Scarlet fever	144
Smallpox	27
Tuberculosis	32
Typhoid fever	5
Whooping cough	113

WYOMING

Cerebrospinal meningitis:	
Lincoln	1
Platte	1
Chicken pox	5
Diphtheria	1
Influenza	10
Measles	1
Mumps	13
Paratyphoid fever	1
Scarlet fever	12
Smallpox	4
Tuberculosis (pulmonary)	1
Whooping cough	5

4 Incomplete report.

Reports for Week Ended January 23, 1926

DISTRICT OF COLUMBIA	Cases
Chicken pox	27
Diphtheria	21
Influenza	2
Measles	26
Pneumonia	97
Scarlet fever	27
Tuberculosis	24
Whooping cough	22
NORTH DAKOTA	
Chicken pox	16
Diphtheria	2
German measles	26
Influenza	1
Measles	20
Mumps	60
Pneumonia	16
Scarlet fever	94
Smallpox	7
Tuberculosis	5
Typhoid fever	2
Whooping cough	22

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Cerebrospinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
December, 1925										
California	25	547	367	3	131	9	23	667	278	59
District of Columbia	0	106	9	-------	27	2	1	89	0	5
Kansas	6	95	36	1	84	3	4	233	15	36
Maine	3	15	7	0	13	0	0	126	0	25
Mississippi	2	159	4,009	2,567	1,209	214	3	88	77	139
Missouri	-------	316	58	1	50	-------	3	660	37	22
New York	15	1,053	180	3	7,311	-------	28	1,503	2	232
Oregon	11	159	32	-------	24	-------	-------	213	93	20
Rhode Island	1	117	32	0	1,385	0	0	64	0	6
South Carolina	-------	288	1,960	328	34	-------	-------	65	58	104
Tennessee [1]	2	89	221	29	108	12	4	178	27	97
Washington	14	92	1	-------	68	-------	1	384	322	17
West Virginia	2	129	127	-------	267	-------	1	234	3	91
Wyoming	0	7	4	0	2	0	0	52	25	3

[1] Reports incomplete.

PLAGUE-ERADICATIVE MEASURES IN THE UNITED STATES

The following items were taken from the reports of plague-eradicative measures from the cities named:

Los Angeles, Calif.

Week ended Jan. 16, 1926:

Number of rats trapped	3,424
Number of rats found to be plague infected	0
Number of squirrels examined	816
Number of squirrels found to be plague infected	0
Number of mice trapped	3,415
Number of mice found to be plague infected	0

Date of discovery of last plague-infected rodent, Nov. 6, 1925.
Date of last human case, Jan. 15, 1925.

Oakland, Calif.

(Including other East Bay communities)

Week ended Jan. 16, 1926:	
Number of rats trapped	428
Number of rats found to be plague infected	0
Totals:	
Number of rats trapped Jan. 1, 1925 to Jan. 16, 1926	80,289
Number of rats found to be plague infected	21
Number of squirrels examined May 1 to Aug. 1, 1925	7,277
Number of squirrels found to be plague infected	0
Number of mice trapped Jan. 1, 1925 to Jan. 16, 1926	31,036

Date of discovery of last plague-infected rat, Mar. 4, 1925.
Date of last human case, Sept. 10, 1919.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

Diphtheria.—For the week ended January 16, 1926, 36 States reported 1,405 cases of diphtheria. For the week ended January 17, 1925, the same States reported 1,783 cases of this disease. One hundred and two cities, situated in all parts of the country and having an aggregate population of more than 30,300,000, reported 850 cases of diphtheria for the week ended January 16, 1926. Last year for the corresponding week they reported 959 cases. The estimated expectancy for these cities was 1,194 cases. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Measles.—Thirty-three States reported 7,955 cases of measles for the week ended January 16, 1926, and 1,931 cases of this disease for the week ended January 17, 1925. One hundred and two cities reported 5,687 cases of measles for the week this year, and 1,063 cases last year.

Poliomyelitis.—The health officers of 38 States reported 14 cases of poliomyelitis for the week ended January 16, 1926. The same States reported 21 cases for the week ended January 17, 1925.

Scarlet fever.—Scarlet fever was reported for the week as follows: Thirty-six States—this year, 3,714 cases; last year, 4,026 cases; 102 cities—this year, 1,664 cases; last year, 1,972 cases; estimated expectancy, 1,198 cases.

Smallpox.—For the week ended January 16, 1926, 36 States reported 879 cases of smallpox. Last year for the corresponding week they reported 1,249 cases. One hundred and two cities reported smallpox for the week as follows: 1926, 274 cases; 1925, 319 cases; estimated expectancy 106 cases. Three deaths from smallpox were reported by these cities for the week this year—at Los Angeles, Calif.

Typhoid fever.—Two hundred and fifty-two cases of typhoid fever were reported for the week ended January 16, 1926, by 35 States. For the corresponding week of 1925, the same States reported 293

cases of this disease. One hundred and two cities reported 63 cases of typhoid fever for the week this year and 116 cases for the corresponding week last year. The estimated expectancy for these cities was 56 cases.

Influenza and pneumonia.—Deaths from influenza and pneumonia were reported for the week by 95 cities, with a population of more than 29,600,000, as follows: 1926, 1,329 deaths; 1925, 1,270.

City reports for week ended January 16, 1926

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1917 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1925, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	75,333	1	2	0	1	0	4	6	1
New Hampshire:									
Concord	22,546	0	0	0	0	1	2	3	1
Vermont:									
Barre	10,008	0	0	0	0	0	0	0	0
Massachusetts:									
Boston	779,620	58	65	29	2	2	160	18	37
Fall River	128,993	1	6	6	0	0	188	6	1
Springfield	142,065	14	4	1	0	0	35	0	1
Worcester	190,757	1	6	7	0	0	167	1	12
Rhode Island:									
Pawtucket	69,760	8	2	0	0	0	29	0	4
Providence	267,918	0	12	7	0	1	454	0	11
Connecticut:									
Bridgeport	(1)	0	9	7	1	1	110	0	2
Hartford	160,197	12	8	4	0	1	31	0	10
New Haven	178,927	34	5	0	0	0	33	0	8
MIDDLE ALTANTIC									
New York:									
Buffalo	538,016	22	20	8	0	2	8	1	11
New York	5,873,356	247	222	167	56	17	1,236	33	286
Rochester	316,786	41	10	16	0	1	50	0	8
Syracuse	182,003	34	10	1	0	0	8	10	6
New Jersey:									
Camden	128,642	21	5	3	0	0	27	0	8
Newark	452,513	96	20	8	4	0	121	5	25
Trenton	132,020		6						
Pennsylvania:									
Philadelphia	1,979,364	196	78	89	1	9	226	26	92
Pittsburg	631,563	47	25	10	0	3	17	13	27
Reading	112,707	10	5	1	0	0	4	0	4
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	409,333	11	12	7	0	4	1	0	20
Cleveland	936,485	51	37	27	2	2	690	0	29
Columbus	279,836	19	5	1	0	1	10	0	6
Toledo	287,380	26	10	12	0	1	39	0	9

[1] No estimate made.

City reports for week ended January 16, 1926—Continued

Division, State, and city	Population July 1, 1925, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL—continued									
Indiana:									
Fort Wayne	97,846	3	5	1	0	1	0	0	4
Indianapolis	358,819	-------	15	4	0	1	198	-------	11
South Bend	80,091	10	1	0	0	0	1	0	3
Terre Haute	71,071	1	1	1	0	0	4	0	0
Illinois:									
Chicago	2,995,239	122	131	71	7	2	67	11	78
Peoria	81,564	4	2	1	0	0	1	4	2
Springfield	63,923	3	2	1	1	0	1	3	1
Michigan:									
Detroit	1,245,824	85	72	39	9	1	910	3	48
Flint	130,316	5	9	2	0	0	8	1	1
Grand Rapids	153,698	8	5	2	0	2	11	1	4
Wisconsin:									
Madison	46,385	27	0	0	0	0	2	2	0
Milwaukee	509,192	151	21	41	1	1	7	28	16
Racine	67,707	3	2	1	1	1	1	1	2
Superior	39,671	0	1	0	0	0	0	0	2
WEST NORTH CENTRAL									
Minnesota:									
Duluth	110,502	9	3	0	0	0	0	0	4
Minneapolis	425,435	84	22	32	0	0	7	0	17
St. Paul	246,001	47	17	23	0	2	4	12	10
Iowa:									
Davenport	(1)	1	1	2	0	-------	1	0	-------
Des Moines	(1)	2	4	4	0	-------	3	0	-------
Sioux City	(1)	8	2	0	0	-------	2	0	-------
Waterloo	36,771	1	0	0	0	-------	1	1	-------
Missouri:									
Kansas City	367,481	30	11	8	3	3	33	3	8
St. Joseph	78,342	2	4	0	0	2	0	0	5
St. Louis	821,543	31	55	59	1	1	11	5	-------
North Dakota:									
Fargo	26,403	5	0	0	0	0	5	38	2
Grand Forks	14,811	6	0	0	0	-------	0	0	-------
South Dakota:									
Aberdeen	15,036	0	1	0	0	0	1	38	-------
Sioux Falls	30,127	3	1	0	0	-------	0	0	-------
Nebraska:									
Lincoln	60,941	12	3	1	0	0	0	1	3
Omaha	211,768	7	5	2	0	0	1	0	9
Kansas:									
Topeka	55,411	12	2	2	0	1	0	0	2
Wichita	88,367	18	4	2	0	0	0	0	3
SOUTH ATLANTIC									
Delaware:									
Wilmington	122,049	1	2	1	0	0	17	1	7
Maryland:									
Baltimore	796,296	132	30	16	55	5	653	117	60
Cumberland	33,741	0	1	2	0	0	3	0	0
Frederick	12,035	0	0	0	0	0	3	0	0
District of Columbia:									
Washington	497,906	22	20	26	6	2	19	0	30
Virginia:									
Lynchburg	30,305	24	1	2	0	0	1	2	0
Norfolk	(1)	21	3	3	0	0	4	1	2
Richmond	186,403	11	7	7	0	1	3	1	5
Roanoke	58,208	5	2	0	0	1	1	1	2
West Virginia:									
Charleston	49,019	0	2	1	0	0	0	4	4
Huntington	63,485	0	2	3	0	1	0	0	5
Wheeling	56,208	1	2	1	0	0	1	0	3
North Carolina:									
Raleigh	30,371	1	1	2	0	1	0	0	4
Wilmington	37,061	5	0	0	0	0	0	2	1
Winston-Salem	69,031	9	1	1	0	0	16	3	5

[1] No estimate made.

City reports for week ended January 16, 1926—Continued

Division, State, and city	Population July 1, 1925, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
SOUTH ATLANTIC—COD.									
South Carolina:									
Charleston	73,125	1	1	2	0	0	0	0	4
Columbia	41,225	2	1	0	0	0	0	1	0
Greenville	27,311	2	0	0	0	0	0	0	0
Georgia:									
Atlanta	(1)	4	3	7	54	2	1	0	12
Brunswick	16,809	0	0	0	10	0	0	0	0
Savannah	93,134	2	2	3	16	0	0	1	5
Florida:									
Tampa	94,743	6	1	1	0	0	0	0	3
EAST SOUTH CENTRAL									
Kentucky:									
Covington	58,309	0	2	2	0	1	0	0	6
Louisville	305,935	6	9	2	3	2	3	0	10
Tennessee:									
Memphis	174,533	10	6	4	0	4	2	4	11
Nashville	136,220	0	2	0	0	3	40	0	13
Alabama:									
Birmingham	205,670	15	3	3	11	6	1	1	13
Mobile	65,955	1	1	0	0	1	0	0	2
Montgomery	46,481	9	1	2	1	0	0	23	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	31,643	2	1	0	0	----	1	0	----
Little Rock	74,216	2	1	0	0	0	0	0	3
Louisiana:									
New Orleans	414,493	2	14	6	15	8	0	0	26
Shreveport	57,857	5	1	1	0	2	0	0	5
Oklahoma:									
Oklahoma City	(1)	1	2	0	0	0	1	0	2
Texas:									
Dallas	194,450	11	7	5	7	2	2	0	16
Galveston	48,375	0	1	6	0	0	0	0	4
Houston	164,954	0	4	5	6	5	1	0	12
San Antonio	198,069	0	2	5	0	0	0	0	9
MOUNTAIN									
Montana:									
Billings	17,971	11	0	0	0	0	0	5	1
Great Falls	29,883	15	1	0	0	0	3	50	1
Helena	12,037	2	0	0	0	0	0	3	1
Missoula	12,668	0	0	1	0	0	1	3	0
Idaho:									
Boise	23,042	5	0	0	0	0	0	0	0
Colorado:									
Denver	280,911	25	9	8	0	6	5	1	20
Pueblo	43,787	4	3	1	0	1	0	0	4
Arizona:									
Phoenix	38,669	1	1	0	0	0	1	0	4
Utah:									
Salt Lake City	130,948	49	3	4	0	0	1	34	9
Nevada:									
Reno	12,665	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	(1)	63	6	4	0	----	4	90	----
Spokane	108,897	17	4	1	0	----	0	0	----
Tacoma	104,445	4	3	5	0	0	0	5	3
Oregon:									
Portland	282,383	7	8	6	3	0	1	4	12
California:									
Los Angeles	(1)	69	42	12	18	0	9	12	16
Sacramento	72,260	9	3	3	67	2	0	0	15
San Francisco	557,530	30	26	5	56	11	6	4	13

[1] No estimate made.

City reports for week ended January 16, 1926—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND											
Maine:											
Portland	2	13	0	0	0	0	1	0	0	10	17
New Hampshire:											
Concord	0	0	0	0	0	1	0	0	0	0	15
Vermont:											
Barre	0	0	0	0	0	0	0	0	0	0	3
Massachusetts:											
Boston	50	94	0	0	0	23	0	0	0	73	251
Fall River	2	3	0	0	0	4	0	1	0	6	46
Springfield	9	8	0	0	0	2	0	0	0	7	34
Worcester	11	20	0	0	0	4	0	0	0	7	59
Rhode Island:											
Pawtucket	1	0	0	0	0	0	0	0	0	3	32
Providence	8	5	0	0	0	5	0	0	0	3	92
Connecticut:											
Bridgeport	6	10	0	0	0	2	0	0	0	6	29
Hartford	8	6	0	0	0	0	0	0	0	2	29
New Haven	10	2	0	0	0	0	0	0	0	5	40
MIDDLE ATLANTIC											
New York:											
Buffalo	22	24	1	5	0	12	1	6	2	35	152
New York	204	194	0	0	0	[1] 105	11	13	2	64	1,557
Rochester	14	26	0	0	0	4	1	0	0	1	86
Syracuse	14	1	0	0	0	2	1	0	0	62	45
New Jersey:											
Camden	4	19	0	0	0	0	1	4	0	3	31
Newark	21	29	0	0	0	8	0	2	0	18	123
Trenton	4		0				1				
Pennsylvania:											
Philadelphia	68	94	1	0	0	26	4	7	2	30	616
Pittsburgh	32	81	0	0	0	14	2	0	0	22	194
Reading	2	5	0	0	0	1	0	0	0	7	41
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	11	14	1	0	0	10	0	0	0	29	148
Cleveland	35	30	2	0	0	16	2	1	0	67	213
Columbus	10	20	1	5	0	3	0	1	0	12	64
Toledo	17	7	3	0	0	6	1	0	0	15	55
Indiana:											
Fort Wayne	4	8	1	0	0	2	0	1	1	0	27
Indianapolis	10	11	6	36	0	8	1	1	0		98
South Bend	4	3	1	11	0	1	1	0	0	2	18
Terre Haute	2	6	0	2	0	1	0	0	0	0	20
Illinois:											
Chicago	145	168	2	0	0	42	4	2	0	52	781
Peoria	6	7	0	0	0	1	0	0	0	2	16
Springfield	2	3	0	0	0	1	0	0	0	0	13
Michigan:											
Detroit	90	124	4	0	0	23	2	0	0	91	333
Flint	9	9	1	0	0	2	1	0	0	60	22
Grand Rapids	11	42	0	0	0	0	0	1	0	31	33
Wisconsin:											
Madison	3	3	0	0	0	0	0	0	0	3	4
Milwaukee	38	21	2	0	0	5	1	5	0	58	99
Racine	6	1	1	0	0	1	0	0	0	8	14
Superior	2	9	3	0	0	1	1	0	0	0	6
WEST NORTH CENTRAL											
Minnesota:											
Duluth	6	10	1	0	0	0	0	0	0	12	20
Minneapolis	42	59	16	0	0	3	1	1	0	1	122
St. Paul	24	58	10	1	0	5	0	0	0	15	61

[1] Pulmonary tuberculosis only.

City reports for week ended January 16, 1926—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST NORTH CENTRAL—continued											
Iowa:											
Davenport	2	4	1	0	----	----	0	0	----	1	----
Des Moines	8	6	2	1	----	----	0	0	----	0	----
Sioux City	3	2	0	10	----	----	0	0	----	0	----
Waterloo	2	1	0	2	----	----	0	0	----	2	----
Missouri:											
Kansas City	14	27	2	0	0	9	0	0	0	17	108
St. Joseph	3	1	0	0	0	2	0	0	0	0	34
St. Louis	38	99	2	0	0	10	2	1	0	7	242
North Dakota:											
Fargo	2	4	0	0	0	0	0	0	0	2	7
Grand Forks	1	0	0	0	----	----	0	0	----	0	----
South Dakota:											
Aberdeen	0	1	0	0	----	----	0	0	----	0	----
Sioux Falls	2	1	1	0	----	----	0	0	----	0	----
Nebraska:											
Lincoln	2	4	0	0	0	0	0	0	0	3	20
Omaha	5	8	5	13	0	2	0	0	0	2	57
Kansas:											
Topeka	2	4	0	0	0	1	0	0	0	1	14
Wichita	4	3	0	0	0	2	0	0	0	0	34
SOUTH ATLANTIC											
Delaware:											
Wilmington	3	10	0	0	0	2	1	0	0	3	29
Maryland:											
Baltimore	33	23	1	0	0	23	2	0	0	33	309
Cumberland	1	0	0	0	0	1	0	0	0	2	8
Frederick	0	0	0	0	0	0	0	0	0	0	3
District of Col.:											
Washington	22	28	1	0	0	11	2	1	1	3	194
Virginia:											
Lynchburg	0	2	0	0	0	0	0	0	0	4	4
Norfolk	1	5	0	0	0	4	1	0	0	5	----
Richmond	5	13	0	0	0	7	0	0	0	0	69
Roanoke	1	4	0	2	0	2	1	0	0	1	18
West Virginia:											
Charleston	1	0	0	0	0	1	0	0	0	2	12
Huntington	1	3	0	0	0	2	0	0	0	0	21
Wheeling	1	5	0	0	0	0	0	0	0	0	10
North Carolina:											
Raleigh	0	1	0	4	0	1	0	0	0	0	17
Wilmington	1	1	0	0	0	0	0	0	0	0	9
Winston-Salem	2	1	2	3	0	3	0	0	0	11	18
South Carolina:											
Charleston	1	1	0	0	0	4	0	0	0	0	33
Columbia	0	1	0	1	0	0	0	0	0	0	----
Greenville	0	0	0	1	0	0	0	0	0	1	4
Georgia:											
Atlanta	3	3	2	1	0	9	0	1	1	1	64
Brunswick	0	0	1	0	0	0	0	0	0	0	2
Savannah	0	0	0	0	0	1	1	2	0	0	33
Florida:											
Tampa	1	1	0	24	0	2	1	0	0	0	37
EAST SOUTH CENTRAL											
Kentucky:											
Covington	1	3	0	0	0	2	0	0	0	0	33
Louisville	5	6	0	0	0	5	0	0	0	0	106
Tennessee:											
Memphis	4	7	1	2	0	2	0	0	0	0	77
Nashville	3	4	0	1	0	4	0	3	2	4	47
Alabama:											
Birmingham	4	4	2	8	0	4	1	0	0	5	77
Mobile	1	1	0	0	0	1	1	0	0	0	23
Montgomery	0	2	1	0	0	0	0	0	0	0	----

City reports for week ended January 16, 1926—Continued.

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	1	1	0	0	----	----	0	0	----	0	----
Little Rock	2	0	0	0	0	3	0	0	0	0	----
Louisiana:											
New Orleans	4	6	1	5	0	22	3	3	2	1	181
Shreveport	1	1	3	0	0	0	0	0	1	0	31
Oklahoma:											
Oklahoma City	2	4	1	0	0	1	1	0	0	1	19
Texas:											
Dallas	4	8	2	1	0	5	1	0	0	20	68
Galveston	0	2	0	3	0	1	0	0	1	0	23
Houston	2	1	0	25	0	5	0	0	0	0	60
San Antonio	1	2	0	0	0	13	0	0	0	0	60
MOUNTAIN											
Montana:											
Billings	2	4	0	0	0	0	0	0	0	0	8
Great Falls	1	6	2	0	0	0	0	0	0	1	4
Helena	0	1	0	0	0	0	0	0	0	0	6
Missoula	1	1	0	0	0	0	0	0	0	0	4
Idaho:											
Boise	2	0	1	2	0	0	0	0	0	0	3
Colorado:											
Denver	10	15	4	0	0	8	0	1	1	52	108
Pueblo	2	0	1	0	0	0	0	0	0	0	11
Arizona:											
Phoenix	0	2	0	1	0	3	0	0	0	0	11
Utah:											
Salt Lake City	3	7	4	0	0	0	0	0	0	16	27
Nevada:											
Reno	0	1	0	0	0	0	0	0	0	0	1
PACIFIC											
Washington:											
Seattle	10	35	3	2	----	----	0	0	----	4	----
Spokane	4	16	5	1	----	----	0	0	----	6	----
Tacoma	3	4	2	0	0	1	1	0	0	0	36
Oregon:											
Portland	6	11	8	4	0	0	0	0	0	1	75
California:											
Los Angeles	18	28	2	84	3	20	2	2	0	8	217
Sacramento	2	1	0	0	0	1	0	0	0	0	37
San Francisco	13	16	1	1	0	13	0	3	0	6	165

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
NEW ENGLAND									
Massachusetts:									
Boston	4	1	0	0	1	0	1	0	0
Fall River	0	1	0	0	0	0	0	0	0
MIDDLE ATLANTIC									
New York:									
New York	1	1	6	5	0	0	1	0	0
Pennsylvania:									
Philadelphia	0	0	1	0	0	0	0	0	0

City reports for week ended January 16, 1926—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
EAST NORTH CENTRAL									
Ohio:									
Columbus	0	0	0	1	0	0	0	0	0
Illinois:									
Chicago	0	0	1	0	0	0	1	0	0
Michigan:									
Detroit	0	1	2	2	0	0	0	0	0
Wisconsin:									
Milwaukee	3	1	0	0	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Minneapolis	0	0	0	0	0	0	0	1	1
St. Paul	1	0	0	0	0	0	0	0	0
Missouri:									
St. Louis	1	0	0	0	0	0	0	0	0
SOUTH ATLANTIC									
Maryland:									
Baltimore [1]	1	1	0	0	0	0	0	0	0
West Virginia:									
Huntington	0	1	0	0	0	0	0	0	0
EAST SOUTH CENTRAL									
Alabama:									
Birmingham	0	0	0	0	2	0	0	1	0
WEST SOUTH CENTRAL									
Louisiana:									
Shreveport	0	0	0	0	0	2	0	0	0
Texas:									
Dallas	0	0	0	0	0	1	0	0	0
MOUNTAIN									
Colorado:									
Denver	0	0	0	0	0	0	0	1	1
Utah:									
Salt Lake City	1	1	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Spokane	2	0	0	0	0	0	0	0	0
California:									
Sacramento	2	0	0	0	0	0	0	0	0
San Francisco	1	0	1	1	0	0	0	0	0

[1] Typhus fever, 1 case at Baltimore, Md.

The following table gives the rates per 100,000 population for 103 cities for the three-week period ended January 16, 1926, compared with those for a like period ended January 17, 1925. The population figures used in computing the rates are approximate estimates as of July 1, 1925 and 1926, respectively, authoritative figures for many of the cities not being available. The 103 cities reporting cases had an estimated aggregate population of nearly 30,000,000 in 1925 and nearly 30,500,000 in 1926. The 96 cities reporting deaths had more than 29,250,000 estimated population in 1925 and more than

29,750,000 in 1926. The number of cities included in each group and the estimated aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, December 27, 1925, to January 16, 1926—Annual rates per 100,000 population—Compared with rates for the corresponding period of 1924–25 [1]

DIPHTHERIA CASE RATES

	Week ended—					
	Jan. 3, 1925	Jan. 2, 1926	Jan. 10, 1925	Jan. 9, 1926	Jan. 17, 1925	Jan. 16, 1926
103 cities	149	129	145	[2] 167	167	[3] 146
New England	249	139	247	139	173	144
Middle Atlantic	140	124	130	[2] 179	187	[3] 153
East North Central	141	129	122	151	132	135
West North Central	171	154	139	283	247	253
South Atlantic	138	126	161	178	115	141
East South Central	84	109	110	52	84	67
West South Central	141	146	137	189	185	120
Mountain	102	109	231	182	148	127
Pacific	160	124	185	97	196	81

MEASLES CASE RATES

103 cities	150	601	207	[2] 1,092	188	[3] 977
New England	367	2,373	381	3,094	424	2,867
Middle Atlantic	120	550	168	[2] 516	157	[3] 855
East North Central	277	736	391	1,761	327	1,302
West North Central	10	59	18	148	12	127
South Atlantic	50	460	79	1,289	42	1,356
East South Central	16	104	26	52	42	239
West South Central	9	0	4	0	22	22
Mountain	111	82	129	55	259	91
Pacific	75	46	185	65	152	51

SCARLET FEVER CASE RATES

103 cities	284	221	307	[2] 292	344	[3] 286
New England	587	300	637	295	542	381
Middle Atlantic	285	166	323	[2] 253	292	[3] 238
East North Central	227	243	166	330	350	321
West North Central	549	493	733	580	731	548
South Atlantic	192	137	148	158	246	186
East South Central	158	99	210	119	168	140
West South Central	79	120	141	112	110	90
Mountain	157	246	370	237	518	319
Pacific	155	205	180	243	174	267

SMALLPOX CASE RATES

103 cities	41	23	55	[2] 41	56	[3] 47
New England	0	0	0	0	0	0
Middle Atlantic	3	1	3	[2] 0	10	[3] 3
East North Central	25	22	38	48	37	37
West North Central	125	18	213	65	187	51
South Atlantic	36	24	29	43	58	68
East South Central	341	73	362	47	200	57
West South Central	31	22	62	52	31	146
Mountain	46	36	28	36	55	18
Pacific	108	148	141	111	202	286

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1925 and 1926, respectively.
[2] New York, N. Y., not included.
[3] Trenton, N. J., not included.

Summary of weekly reports from cities, December 27, 1925, to January 16, 1926—Annual rates per 100,000 population—Compared with rates for the corresponding period of 1924–25—Continued

TYPHOID FEVER CASE RATES

	Week ended—					
	Jan. 3, 1925	Jan. 2, 1926	Jan. 10, 1925	Jan. 9, 1926	Jan. 17, 1925	Jan. 16, 1926
103 cities	36	10	32	[1] 13	20	[2] 11
New England	24	7	14	31	24	2
Middle Atlantic	58	7	49	[1] 12	21	[2] 16
East North Central	26	6	13	11	22	8
West North Central	4	6	6	2	10	4
South Atlantic	38	11	52	9	19	8
East South Central	37	31	47	16	16	16
West South Central	35	47	66	22	66	13
Mountain	0	9	9	9	0	9
Pacific	11	8	25	11	6	13

INFLUENZA DEATH RATES

96 cities	18	15	20	[1] 21	21	[2] 23
New England	2	12	17	9	26	14
Middle Atlantic	21	10	20	[1] 18	18	[2] 16
East North Central	9	8	15	12	14	11
West North Central	8	15	13	8	2	19
South Atlantic	25	19	33	15	42	23
East South Central	58	31	42	83	42	88
West South Central	48	43	39	47	82	80
Mountain	37	27	18	46	28	64
Pacific	11	39	18	57	11	46

PNEUMONIA DEATH RATES

96 cities	195	184	185	[1] 220	206	[2] 211
New England	168	210	117	246	151	208
Middle Atlantic	225	186	227	[1] 240	259	[2] 235
East North Central	155	142	143	176	143	153
West North Central	91	117	87	140	104	125
South Atlantic	232	261	232	289	271	276
East South Central	278	259	268	332	173	285
West South Central	324	312	247	335	426	354
Mountain	222	264	222	127	240	328
Pacific	167	135	164	220	145	167

[1] New York, N. Y., not included. [2] Trenton, N. J., not included.

Number of cities included in summary of weekly reports, and aggregate population of cities in each group, approximated as of July 1, 1925 and 1926, respectively

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases		Aggregate population of cities reporting deaths	
			1925	1926	1925	1926
Total	103	96	29, 944, 996	30, 473, 129	29, 251, 658	29, 764, 201
New England	12	12	2, 176, 124	2, 206, 124	2, 176, 124	2, 206, 124
Middle Atlantic	10	10	10, 346, 970	10, 476, 970	10, 346, 970	10, 476, 970
East North Central	16	16	7, 481, 656	7, 655, 436	7, 481, 656	7, 655, 436
West North Central	14	11	2, 594, 962	2, 634, 662	2, 461, 380	2, 499, 036
South Atlantic	21	21	2, 716, 070	2, 776, 070	2, 716, 070	2, 776, 070
East South Central	7	7	993, 103	1, 004, 953	993, 103	1, 004, 953
West South Central	8	6	1, 184, 057	1, 212, 057	1, 078, 198	1, 103, 695
Mountain	9	9	563, 912	572, 773	563, 912	572, 773
Pacific	6	4	1, 888, 142	1, 934, 084	1, 434, 245	1, 469, 144

FOREIGN AND INSULAR

THE FAR EAST

Report for week ended January 2, 1926.—The following report for the week ended January 2, 1926, was transmitted by the Far Eastern Bureau of the health section of the League of Nations' secretariat, located at Singapore, to the headquarters at Geneva:

Port	Plague		Cholera		Smallpox	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
Calcutta	----	0	----	9	30	13
Bombay	----	0	----	0	11	4
Madras	----	0	----	13	3	1
Rangoon	----	0	----	0	1	1
Karachi	----	0	----	0	7	2
Negapatam	----	0	----	12	0	0
Colombo	0	0	0	0	0	0
Basra	0	0	0	0	16	12
Singapore	0	0	0	0	0	0
Port Swettenham	0	0	0	0	0	0
Penang	0	0	0	0	0	0
Batavia	0	0	0	0	0	0
Soerabaya	0	0	0	0	4	3
Samarang	0	0	0	0	0	0
Belawan Deli	0	0	0	0	0	0
Padang (Sumatra)	0	0	0	0	0	0
Sabang (Rhio)	0	0	0	0	0	0
Macassar	0	0	0	0	0	0
Sandakan (North Borneo)	0	0	0	0	0	0
Manila	0	0	0	0	0	0
Zamboanga	0	0	0	0	0	0
Bangkok	0	0	23	14	3	3
Saigon and Cholon	0	0	0	0	0	0
Hongkong	0	0	0	0	0	0
Shanghai	0	0	0	0	----	5
Amoy	0	0	0	0	0	0
Nagasaki	0	0	0	0	0	0
Yokohama	0	0	0	0	0	0
Simonoseki	0	0	0	0	0	0
Moji	0	0	0	0	0	0
Kobe	0	0	0	0	0	0
Osaka	0	0	0	0	0	0
Keelung	0	0	0	0	0	0
Fusan	0	0	0	0	0	0
Dairen	0	0	0	0	0	0
Adelaide	0	0	0	0	1	0
Brisbane	0	0	0	0	0	0
Fremantle	0	0	0	0	0	0
Melbourne	0	0	0	0	0	0
Sydney	0	0	0	0	0	0
Rockhampton	0	0	0	0	0	0
Townsville	0	0	0	0	0	0
Port Darwin	0	0	0	0	0	0
Broome	0	0	0	0	0	0
Port Moresby	0	0	0	0	0	0
Honolulu	0	0	0	0	0	0
Suez	0	0	0	0	0	0
Alexandria	0	0	0	0	----	0
Port Said	0	0	0	0	0	0
Mombasa (Kenya)	0	0	0	0	0	0
Zanzibar	0	0	0	0	0	0
Massowah	0	0	0	0	0	0
Djibuti	0	0	0	0	0	0
Lourenco Marques	0	0	0	0	0	0
Durban	0	0	0	0	0	0
East London	0	0	0	0	0	0
Port Elizabeth	0	0	0	0	0	0
Cape Town	0	0	0	0	0	0
Port Louis (Mauritius)	0	0	0	0	0	0
Seychelles	0	0	0	0	0	0

ALGERIA

Smallpox—Increased prevalence at Algiers.—An increase in the prevalence of smallpox at Algiers, Algeria, has been noted, with 46 cases reported from December 1 to 10 and 51 cases from December 11 to 20, 1925, as compared with 12 cases reported during the last decade in the month of November, 1925. Under date of January 7, 1926, vaccination was stated to have been ordered for all persons in Algiers irrespective of age, and including temporary residents living in the vicinity of Algiers and Tizi Ouzou.

CANADA

Communicable diseases—January 3 to 16, 1926.—The following table shows the numbers of cases of certain communicable diseases in seven Provinces of Canada during the two-week period from January 3 to 16, 1926. The information was supplied by the Canadian Ministry of Health.

	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	Total
Cerebrospinal fever:								
Week ended Jan. 9, 1926				1				1
Week ended Jan. 16, 1926			1	3				4
Lethargic encephalitis:								
Week ended Jan. 9, 1926								
Week ended Jan. 16, 1926					1			1
Poliomyelitis:								
Week ended Jan. 9, 1926				2	1			3
Week ended Jan. 16, 1926								
Smallpox:								
Week ended Jan. 9, 1926				21	14	1		36
Week ended Jan. 16, 1926				14		4	2	20
Typhoid fever:								
Week ended Jan. 9, 1926		1	8	13	2	17	2	43
Week ended Jan. 16, 1926		2	11	9	3	41		66

CANARY ISLANDS

Plague—Las Palmas—Vicinity of Santa Cruz de Teneriffe.—Plague has been reported in the Canary Islands as follows: December 24, 1925—La Laguna, three cases with two deaths (vicinity of Santa Cruz de Teneriffe); Las Palmas, one case.

ECUADOR

Plague—Guayaquil—December 16–31, 1925.—During the two week period ended December 31, 1925, 16 cases of plague with four deaths were reported at Guayaquil, Ecuador.

Plague-infected rats.—During the period under report, 12,794 rats were reported taken and 67 rats found plague infected.

GREAT BRITAIN (SCOTLAND)

Measles—Glasgow.[1]—During the week ended January 2, 1926, 246 cases of measles with 17 deaths were reported at Glasgow, Scotland.

MEXICO

Epidemic smallpox—San Luis Potosi.—Smallpox has been reported present in epidemic form at San Luis Potosi, Mexico, with 26 deaths from the disease from December 20, 1925, to January 16, 1926. The number of cases has not been reported.

[1] Public Health Reports, Jan. 22, 1926, p. 154.

PERU

Plague—Huacho.—Information has been received under date of January 26, 1926, of the occurrence of 15 cases of plague at Huacho, a port situated about 60 miles north of Callao, Peru. Huacho is an occasional port of call for vessels bound for the Canal Zone and a discharging port for some vessels southward bound. Plague was reported present at Huacho in July, 1925, with three cases and one death.

UNION OF SOUTH AFRICA

Plague—Cape Province—Orange Free State.—Plague has been reported in the Union of South Africa as follows: Week ended December 12, 1925—Cape Province, in Middleburg district, one case, European. Orange Free State, one fatal case occurring on a farm in Bothaville district, in a native.

VIRGIN ISLANDS

Communicable diseases—December, 1925.—During the month of December, 1925, communicable diseases were reported in the Virgin Islands of the United States as follows:

Island and disease	Cases	Remarks
St. Thomas and St. John:		
Chancroid	1	
Dengue	1	
Filariasis	1	From St. Croix; Bancrofti.
Gonorrhea	4	
Pellagra	1	
Syphilis	7	Primary, 2; secondary, 3; of aorta, 1; of eye, 1
St. Croix:		
Chancroid	2	
Filariasis	2	Bancrofti.
Gonorrhea	1	
Syphilis	2	Secondary.
Tuberculosis	1	Chronic, pulmonary.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

The reports contained in the following tables must not be considered as complete or final as regard either the lists of countries included or the figures for the particular countries for which reports are given

Reports Received During Week Ended February 5, 1926 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
India				Nov. 15-21, 1925: Cases, 2,188; deaths, 1,323.
Calcutta	Dec. 6-12	23	30	
Madras	Dec. 13-26	69	26	
Japan	Sept. 20-Oct. 17	288		
Philippine Islands:				
Manila	Dec. 14-26	5	2	
Provinces—				
Bulacan	Nov. 29-Dec. 12	71	35	
Pampanga	do	38	26	
Rizal	Nov. 8-21	5		
Russia	July-August	4		
Siam:				
Bangkok	Dec. 6-12	39	26	

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended February 5, 1926—Continued

PLAGUE

Place	Date	Cases	Deaths	Remarks
Canary Islands:				
Santa Cruz de Teneriffe	Dec. 21-27	1		Officially reported Dec. 24, 1925.
China:				
Nanking	Dec. 13-26			Present.
Do	Dec. 27-Jan. 2			Do.
Ecuador:				
Guayaquil	Dec. 16-31	16	4	Rats taken, 12,794; plague-infected rats found, 67.
India				Nov. 15-21, 1925: Cases, 1,164; deaths, 696.
Bombay	Dec. 6-12	1	1	
Calcutta	Dec. 6-12	1	1	
Karachi	Dec. 13-19	1	1	
Rangoon	Dec. 6-12	1	1	
Java:				
Djokjakarta	Oct. 20			Epidemic. One locality.
Kediri	Dec. 7			Do.
Rembang	Oct. 20			Do.
Soerabaya	Nov. 22-28	6	6	
Mauritius	Oct. 18-Nov. 14	4	4	
Nigeria	August - September.	349	267	
Peru:				
Huacho		15		Port. Situated 60 miles north of Callao. Reported under date of Jan. 26, 1926.
Russia	July-August	139		
Senegal	October	23	13	
Siam	Sept. 6-Oct. 3	27	20	
Union of South Africa				Dec. 6-12, 1925: Cases, 2; deaths, 1. One case occurred in European.
Cape Province—				
Middleburg District	Dec. 6-12	1		European.
Orange Free State—				
Bothaville District	do	1	1	Native. On farm.

SMALLPOX

Algeria:				
Algiers	Dec. 11-20	51		
Australia:				
Queensland—				
Brisbane	Dec. 9-15	1		
British East Africa:				
Kenya—				
Mombasa	Dec. 6-12	4	2	From Tivi, 9 miles distant on mainland.
British South Africa:				
Southern Rhodesia	Dec. 4-10	1		
Canada				Jan. 3-16, 1926: Cases, 56.
Alberta	Jan. 10-16	2		
British Columbia—				
Vancouver	Jan. 4-10	1		
Manitoba	Jan. 3-9	14		
Winnipeg	Jan. 17-23	1		
Ontario	Jan. 3-16	35		
Toronto	Jan. 10-16	18		
Saskatchewan	Jan. 3-16	5		
China:				
Amoy	Dec. 6-19			Present.
Antung	Dec. 14-20	1		
Chungking	Dec. 20-26			Do.
Hankow	do	1		
Nanking	Dec. 6-26			Do.
Do	Dec. 27-Jan. 2			Do.
France	October	66		
Gold Coast	September	14	4	
Great Britain:				
England and Wales	Dec. 27-Jan. 2	203		
Hull	Dec. 27-Jan. 9	14		
Newcastle-on-Tyne	Dec. 27-Jan. 2	1		
Nottingham	Dec. 13-26	5		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received During Week Ended February 5, 1926—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
India				Nov. 15-21, 1925: Cases, 1,842; deaths, 348.
Bombay	Nov. 29-Dec. 12	7	7	
Calcutta	Dec. 6-12	8	6	
Karachi	Dec. 13-19	3		
Madras	Dec. 13-26	5	1	
Rangoon	Dec. 6-12	2	1	
Iraq	Sept. 20-Oct. 17	40	16	
Italy	Oct. 4-31	12		
Java:				
Soerabaya	Nov. 22-28	51	4	
Mexico				September, 1925: Deaths, 252.
Aguascalientes	Jan. 3-16		3	
Guadalajara	Jan. 12-18		1	
Mexico City	Jan. 3-9	1		Including municipalities in Federal District.
San Luis Potosi	Dec. 20-Jan. 16		16	
Torreon	Dec. 1-31		36	
Nigeria	August-September	103	1	
Poland				Nov. 1-7, 1925: Cases, 8.
Portugal:				
Oporto	Dec. 27-Jan. 2	1		
Russia	May-June	2,333		Later than previously published reports.
Do	July-August	760		
Spain:				
Madrid				Year 1925: Deaths, 18.
Malaga	Dec. 27-Jan. 2		1	
Valencia	do	1		
Switzerland	Oct. 25-Nov. 21	26		
Tunisia:				
Tunis	Dec. 21-31		1	
Do	Jan. 1-10	1		
Union of South Africa:				
Transvaal—				
Pretoria District	Dec. 6-12			Outbreaks. In native compound.

TYPHUS FEVER

Algeria:				
Algiers	Dec. 11-20	1		
Bulgaria	September-October.	26	2	
China:				
Antung	Dec. 21-27	1		
Czechoslovakia	October	8		
France	July-October	4		
Germany	Oct. 25-31	1		
Lithuania	October	1		
Mexico				September, 1925: Deaths, 25.
Mexico City	Jan. 3-9	3		Including municipalities in Federal district.
Morocco	August	3		
Poland				Nov. 1-14, 1925: Cases, 88; deaths, 11.
Rumania	July	74	9	
Russia	May-June	10,680		Later than previously published reports.
Do	July-August	3,136		
Union of South Africa				Dec. 6-12, 1925: Cases, deaths, 1.
Cape Province—				
Middleburg District	Dec. 6-12	1		European. On farm.
Orange Free State—				
Bethulia District	do			Outbreaks.
Bothaville District	do	1		Native. On farm.

YELLOW FEVER

Gold Coast	September	1	1	
Nigeria	August-September.	2	1	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 26, 1925, to January 29, 1926 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
India				Oct. 18–Nov. 14, 1925: Cases, 6,544; deaths, 3,790.
Calcutta	Nov. 1–28	101	89	
Madras	Nov. 15–Dec. 12	77	31	
Rangoon	Nov. 8–Dec. 5	4	4	
Indo-China				September, 1925: Cases, 9; deaths, 5. September, 1924: Cases, 7; deaths, 4. (European cases, 2.)
Province—				
Annam	Sept. 1–30	2	2	September, 1924: None.
Cochin China	do	5	3	September, 1924: 1 case; 1 death.
Tonkin	do	2		September, 1924: None.
Japan	Aug. 30–Sept. 19	121		
Philippine Islands:				
Manila	Nov. 9–Dec. 5	8	6	
Provinces—				
Bataan	Nov. 30–Dec. 13	10	8	
Bulacan	Oct. 18–Nov. 7	92	64	
Do	Nov. 23–Dec. 13	108	34	
Laguna	do	16	13	
Nueva Ecija	do	6	2	
Pampanga	Nov. 1–7	1	1	
Do	Nov. 23–Dec. 13	42	30	
Rizal	Sept. 27–Oct. 24	70	21	
Romblon	Dec. 7–13	23	12	
Russia	May–June	7		
Siam:				
Bangkok	Oct. 4–Nov. 14	108	68	
Do	Nov. 22–Dec. 5	122	62	
On vessel:				
Steamship	Oct. 3	9		Arrived at Bangkok, Siam; 9 cases in coolie passengers.

PLAGUE

Brazil:				
Bahia	Nov. 8–14	2		
Santos	Dec. 8–21		2	
British East Africa:				
Kenya—				
Kisumu	Nov. 22–Dec. 5	1	2	
Uganda Protectorate	September, 1925	103	85	
Canary Islands:				
Santa Cruz de Teneriffe	Dec. 18	2		
Ceylon:				
Colombo	Nov. 15–28	3	3	
Do	Nov. 29–Dec. 5			One plague rodent.
China:				
Nanking	Nov. 15–Dec. 5			Prevalent.
Ecuador:				
Guayaquil	Nov. 1–Dec. 15	15	8	Rats taken, Nov. 1–Dec. 15, 1925: 36,576; rats found infected, 214.
Egypt				Jan. 1–Dec. 9, 1925: Cases, 138.
Beni Suef	Nov. 18, 1925	1	1	Corresponding period, 1924:
Fayoum Province	Dec. 3–9	1	1	Cases, 365.
Greece:				
Athens	Nov. 1–30	18	4	Including Piræus.
Patras	Nov. 13–Dec. 12	4	1	
India				Oct. 18–Nov. 7, 1925: Cases, 4,776; deaths, 3,247.
Karachi	Nov. 1–14	3	2	
Madras	Oct. 25–Nov. 7	75	41	
Do	Nov. 15–21	35	22	
Rangoon	Oct. 25–Dec. 5	18	11	
Indo-China				September, 1925: Cases, 17; deaths, 16. September, 1924: Cases, fatal, 12.
Province—				
Cambodia	Sept. 1–30	11	11	September, 1924: Cases, 9; deaths, 9.
Cochin China	do	6	5	September, 1924: 1 case, 1 death.

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 26, 1925, to January 29, 1926—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Java:				
Batavia	Oct. 24–Nov. 6	94	89	Province.
Do	Nov. 14–Dec. 4	169	159	
Cheribon	Sept. 27–Oct. 17		166	
Djokjakarta	Nov. 9			Epidemic in one locality.
Pekalongan	Sept. 27–Oct. 17		42	
Soerabaya	Oct. 11–Nov. 21	30	30	
Tegal	Sept. 27–Oct. 17	6	6	
Madagascar:				
Province—				
Itasy	Sept. 16–Oct. 31	20	20	
Moramanga	do	17	17	
Tananarive	do	174	159	
Town—				
Fort Dauphin	Sept. 16–Oct. 15	5	2	
Tamatave (port)	Sept. 16–30	3	2	
Do	Oct. 16–31	4	4	
Tananarive	Sept. 16–30	2	2	
Mauritius Island	Sept. 20–Oct. 17	5	5	
Russia	May–June	67		
Senegal	September, 1925	22	12	
Siam	Aug. 23–Sept. 5	23	20	
Bangkok	Nov. 15–28	3	3	
Straits Settlements:				
Singapore	Nov. 1–21	5	5	
Syria:				
Beirut	Nov. 11–20	1		
Union of South Africa:				
Cape Province—				
Steynsburg district	Nov. 15–21	1		Native. On farm.
Orange Free State—				
Boshof district	Nov. 29–Dec. 5	1	1	In native.

SMALLPOX

Algeria:				
Algiers	Nov. 21–Dec. 10	58		
Arabia:				
Aden	Nov. 29–Dec. 5	1		Imported.
Argentina:				
Rosario	October, 1925		1	
Brazil:				
Rio de Janeiro	Nov. 1–28	134	72	
British East Africa:				
Kenya—				
Mombasa	Nov. 15–Dec. 5	10	3	
Uganda Protectorate	Sept. 1–30	7	4	
British South Africa:				
Southern Rhodesia	Nov. 13–19	1		Native.
Canada				Sept. 13–Jan. 2: In seven provinces, 186 cases.
Alberta—				
Calgary	Dec. 13–19	1		From Drumheller, vicinity of Calgary.
Manitoba—				
Winnipeg	do	2		
Do	Jan. 3–9	6		
New Brunswick—				
Northumberland	Dec. 6–13	1		
Ontario				December, 1925: Cases, 32; deaths, 1. Occurring in 15 localities.
Ottawa	Dec. 6–12	2		
Do	Jan. 3–9	1		
Toronto	Dec. 27–Jan. 2	1		
Do	Jan. 3–9	2		
Saskatchewan—				
Moose Jaw	do	2		
Ceylon:				
Colombo	Dec. 6–12	1		Port case.
China:				
Amoy	Oct. 25–Dec. 5		1	
Antung	Dec. 7–13	1		
Chungking	Nov. 15–Dec. 5			Present.
Foochow	Nov. 1–21			Do.
Hankow	Nov. 14–21	3		
Hongkong	Nov. 22–28	3		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 26, 1925, to January 29, 1926—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
China—Continued				
Manchuria—				
An-shan	Dec. 6-12	1		
Dairen	Oct. 19-Dec. 6	40	10	
Mukden	Oct. 24-Nov. 15	1		
Tieh-ling	do	2		
Nanking	Nov. 21-Dec. 5			Present.
Shanghai	Oct. 25-Dec. 19	23	25	
Swatow	Nov. 22-Dec. 5			Do.
Tientsin	Nov. 1-7	1		
Egypt:				
Alexandria	Dec. 3-9	1	1	
France				September, 1925: Cases, 25.
Great Britain:				
England and Wales	Nov. 15-Dec. 26	790		
Hull	Nov. 29-Dec. 26	25		
Newcastle-on-Tyne	do	6		
Sheffield	Nov. 22-Dec. 12	7		
Greece				Oct. 1-31, 1925: Cases, 16.
Athens	Nov. 1-30	17	1	
India				Oct. 18-Nov. 14, 1925: Cases, 5,093; deaths, 1,136.
Bombay	Nov. 8-28	12	7	
Calcutta	Nov. 29-Dec. 5	21	12	
Karachi	Nov. 1-21	23		
Do	Nov. 29-Dec. 5	4	2	
Madras	Nov. 15-Dec. 12	12	4	
Rangoon	Oct. 25-Nov. 28	3		
Indo-China				September, 1925: Cases, 122; deaths, 33. September, 1924: Cases, 78; deaths, 22.
Province—				
Annam	Sept. 1-30	47	9	September, 1924: Cases, 8; deaths, 2.
Cambodia	do	29	8	September, 1924: Cases, 16; deaths, 1.
Cochin China	do	28	16	September, 1924: Cases, 43; deaths, 19.
Tonkin	do	18		September, 1924: Cases, 11.
Iraq				Sept. 6-19, 1925: Cases, 41; deaths, 24.
Bagdad	Nov. 1-14	4	4	
Do	Nov. 22-Dec. 5	9	9	
Italy				Aug. 2-Sept. 30, 1925: Cases, 26.
Rome	Oct. 12-25	1		
Jamaica				Nov. 27-Dec. 26, 1925: Cases, 52.
Kingston	Nov. 27-Dec. 26	43		Reported as alastrim.
Japan:				
Taiwan	Nov. 11-Dec. 10	3		
Yokohama	Dec. 14-20	1		
Java:				
Batavia	Oct. 24-30	1		
Do	Nov. 14-27	5		Province and city.
Kraksaan	Oct. 11-17	11		
Malang	do	2		
North Bantam	Oct. 4-17	4		
Probolingo	Oct. 11-17	1		
Soerabaya	Oct. 11-Nov. 21	343	50	
South Bantam	do	1		
Tegal	Oct. 4-10	9	1	
Malta	November, 1925	14		
Mexico				July-August, 1925: Deaths, 905.
Aguascalientes	Dec. 13-Jan. 2	4	3	
Durango	Dec. 1-31		1	
Guadalajara	Dec. 29-Jan. 4		3	
Mexico City	Nov. 28-Dec. 5	1		
Torreon	Nov. 1-30		15	
Persia:				
Teheran	July 23-Aug. 23		68	
Peru:				
Arequipa	Oct. 1-31		1	
Portugal:				
Lisbon	Oct. 4-31	124		
Do	Nov. 16-Dec. 6		31	
Do	Nov. 14-Dec. 19	179		
Oporto	Nov. 22-Dec. 19	2	3	
Russia				May-June, 1925: Cases, 1,336.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from December 26, 1925, to January 29, 1926—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Siam				July 12–Sept. 5, 1925: Cases, 21; deaths, 6.
Spain:				
Malaga	Nov. 29–Dec. 5		2	
Valencia	Dec. 20–26	1		
Switzerland				June 28–Oct. 24, 1925: Cases, 36.
Lucerne	Oct. 1–Nov. 30	8		
Tunisia:				
Tunis	Nov. 21–30	2		
Do	Dec. 11–20	10		

TYPHUS FEVER

Algeria:				
Algiers	October, November.	3		
Argentina:				
Rosario	Oct. 1–31	1		
Chile:				
Valparaiso	Nov. 29–Dec. 5		1	
China:				
Antung	Nov. 29–Dec. 6	4	1	
Egypt:				
Port Said	Nov. 19–25	1		
Finland				October, 1925: One case.
Greece:				
Athens	Nov. 1–30	11	2	
Latvia	October, 1925	2		
Lithuania				September, 1925: Cases, 8; deaths, 1.
Mexico				July–August, 1925; deaths, 65.
Aguascalientes	Dec. 14–19	1		
Durango	Dec. 1–31		1	
Guadalajara	Dec. 8–Jan. 4		3	
Mexico City	Nov. 22–Jan. 2	162		Including municipalities in Federal district.
Tampico	Dec. 21–Jan. 10	1	1	
Torreon	November, 1925		1	
Palestine:				
Jaffa	Dec. 1–7	1		
Nazareth	Nov. 3–9	1		
Safad	Nov. 24–30	1		
Tel-Aviv	do	1		
Peru:				
Arequipa	October, 1925		2	
Poland	Oct. 11–31	54	5	
Rumania				July, 1925: Cases, 74; deaths, 9.
Russia				May–June, 1925: Cases, 7,609.
Union of South Africa				October 1–31, 1925: Cases, 88; deaths, 7 (colored); cases, 7 (European population).
Cape Province	Oct. 1–31	63	5	Colored.
Do	Nov. 8–14			Outbreaks in two districts.
Natal	Oct. 1–Dec. 5	1		
Orange Free State	Nov. 29–Dec. 5	23	1	
Transvaal	Oct. 1–31	1	1	